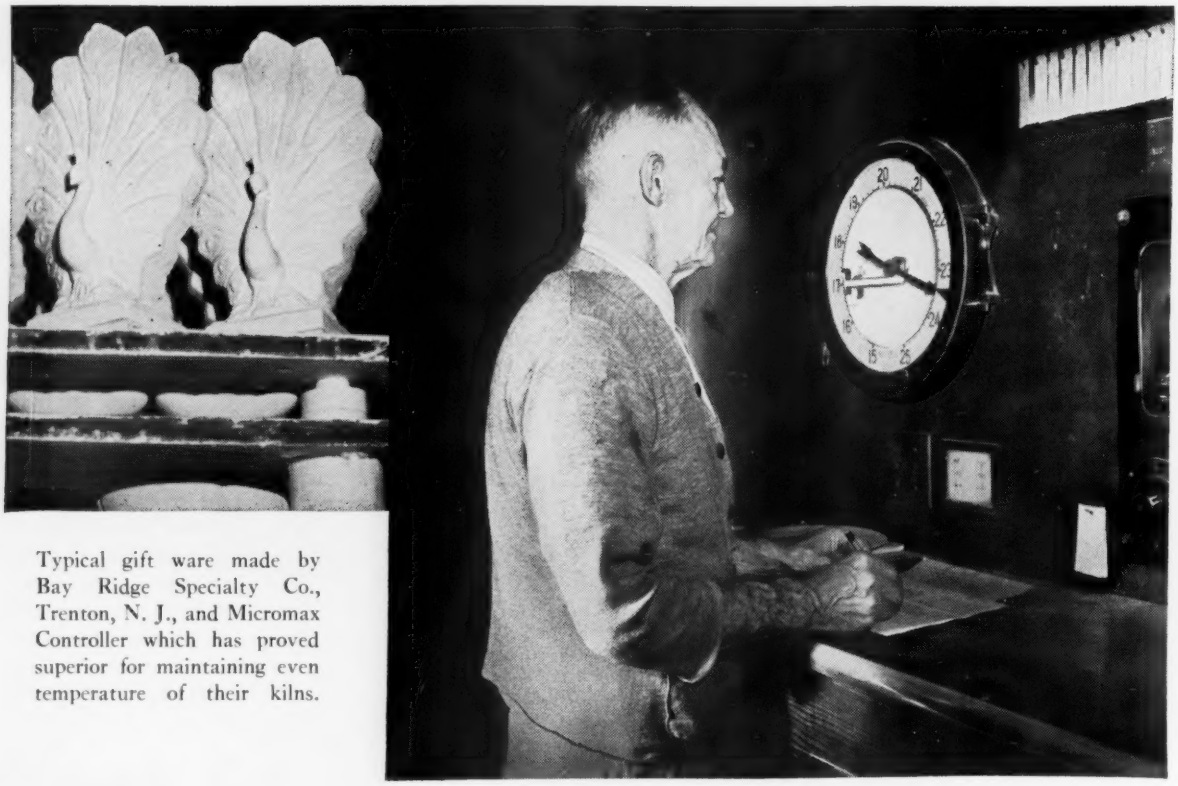
CERAMIC ABSTRACTS and THE BULLETIN

OF THE

AMERICAN CERAMIC SOCIETY

JUNE 15, 1945

MONTHLY PUBLICATION DEVOTED TO THE ARTS AND SCIENCES RELATED TO THE SILICATE INDUSTRIES



Typical gift ware made by Bay Ridge Specialty Co., Trenton, N. J., and Micromax Controller which has proved superior for maintaining even temperature of their kilns.

Rejects Cut by Micromax Control In Bay Ridge Specialty's Plant

Side by side in Bay Ridge Specialty Co.'s Trenton, N. J., plant are two tunnel kilns, for gift ware and bathroom items.

These kilns are alike in every important detail—except their control pyrometers. One has a late-model Controller of the millivolt-meter type; the other has a Micromax Round-Chart Controller which (like all L&N pyrometers) is a potentiometer-type instrument. The comparison between the two is ideal for the plant manager who is thinking of modernizing the control of a kiln; and here's what the Bay Ridge manager says:

"Micromax remains entirely accurate, week after week; holds the kiln right on the nose and records even the tiny changes in temperature. But this other Pyrometer lets temperature vary by as much as ten degrees before it either moves the oil valve or records the change."

"How important," we asked, "is that ten degrees?"

"It can be the difference between good ware and ware that's blistered," was the reply.

"What do you do to protect yourself against that error?"

"We watch the cones and set the oil burners by hand if they show the ware's too hot...But that constant watching takes a lot of time. The man on the Micromax-controlled kiln can do a better all-round job, simply because he isn't worrying about the temperature. That's why we have a Micromax on order for this other kiln."

An L&N engineer will be glad to explain the Micromax Controller, or will send a Catalog, as you prefer.

Jrl Ad N-33A-664(5)

depends on me!
A Slogan For Every American

LEEDS & NORTHRUP COMPANY, 4990 STENTON AVE., PHILA., PA.

LEEDS & NORTHRUP

MEASURING INSTRUMENTS TELEMETERS AUTOMATIC CONTROLS HEAT-TREATING FURNACES

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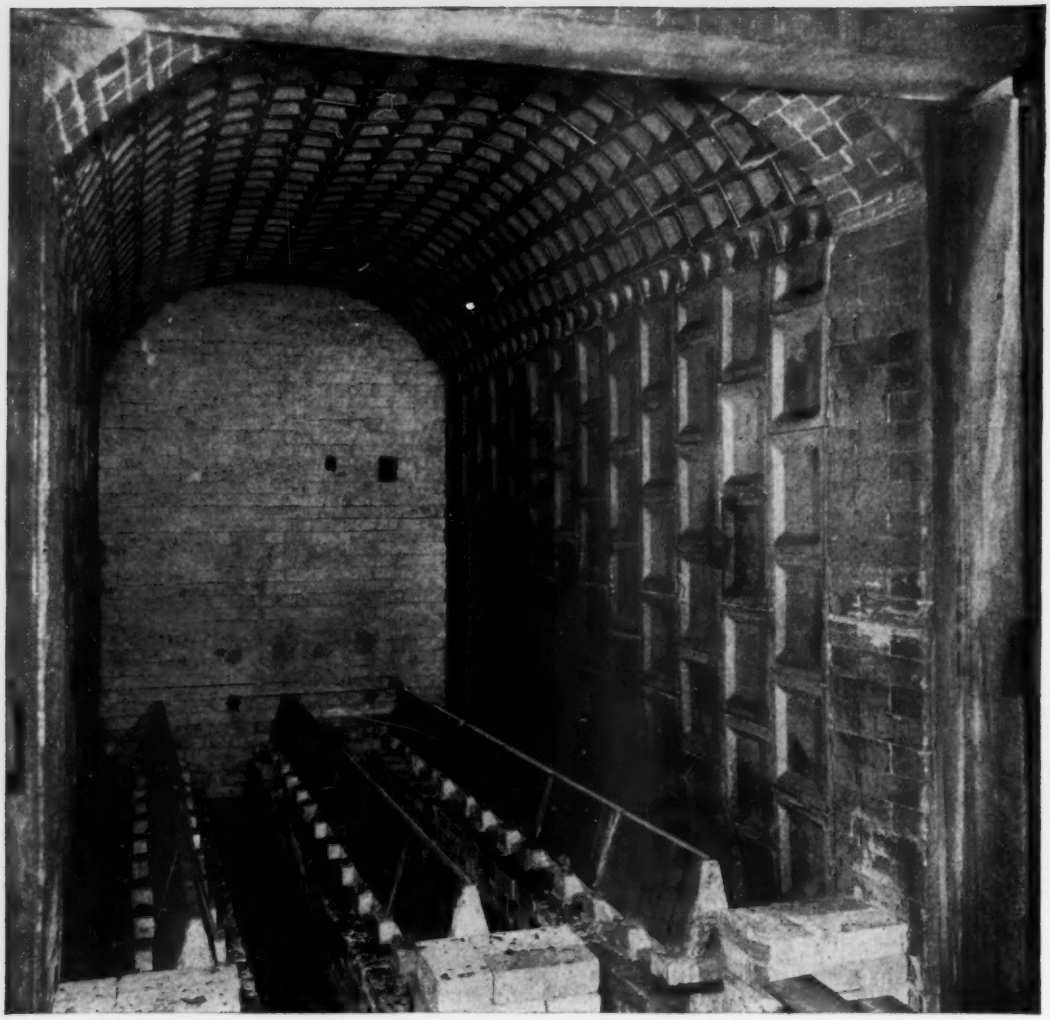

If trouble-free operation is the topic–

LET'S TALK ABOUT THIS "CARBOFRAX" MUFFLE

The above photo shows a high side wall furnace after about as bad a beating as any muffle ever had to take.

Installed in August, 1941, this "CARBOFRAX" silicon carbide muffle was operated for only four months on enameling. Then came the war. The furnace was turned over to heat treating—and has been used continuously on normalizing, hardening and annealing ever since.

Normalizing and hardening are carried out at temperatures up to 1750° F.; the furnace being kept at temperature while charging cold loads up to 2 tons. **On annealing,** up to 4 tons of metal are charged in the cold furnace and brought to 1600° F. in 10-14 hours, held for 2 hours and then cooled to 900° F. in 10-12 hours.

In October, 1944—after operating under these excessively severe conditions—a new hearth and under-hearth arches finally had to be installed. These were the first repairs of any kind.

THE CARBORUNDUM COMPANY
Dept. B3
Refractories Division
Perth Amboy, New Jersey

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Illustration shows how material is conveyed by clockwise rotation of mixing pan and deflected by stationary side wall plow into the path of counter-clockwise rotating plows and muller or mullers established off-center of pan diameter.

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35 E. Gay St., Columbus, Ohio

HERE'S HOW IT ALL STARTED

THE SATURDAY EVENING POST March 16, 1918

ARMCO IRON

Enameled Products

EVERYTHING she sees fills her with delight—the exquisite finish of the enameled stove, refrigerator, and kitchen-cabinet, the finely polished table-top. "I never dreamed that enameled articles could be so smooth and perfect," she keeps telling her friends.

The reason is that Armco (American Ingot) Iron—*the metal beneath the enameling*—is the purest iron made, the most carefully manufactured.

It is remarkably free from seams, scars, cracks, spots, pin-holes, and other defects common to ordinary sheet metal which show through and spoil enameled surfaces.

You have seen and even owned enameled articles which because of the impurities in the metal underneath showed ugly spots, rough places, and other blemishes. For that reason, the smooth, beautiful enameled surfaces made possible by Armco Iron are a revelation.

We wish that you could visit our mills and see what infinite pains and patience it takes to make Armco Iron perfect for enameling purposes. You would behold the impurities burned out of the molten mass of iron at heats so tremendous they would set you wondering how the furnace walls could keep from melting before your eyes. In every department you would see expert chemists and inspectors testing Armco Iron over and over again—and turning back every piece that showed the slightest defect.

Armco Iron Enamel products are by no means confined to the household. Special enameled equipment has been devised for hospital use. There are also Armco Iron enameled medicine-chests, closet-tanks, switch-plates, and other electrical fixtures, billiard-tables, barbers' chairs, advertising signs, thermometer faces, and many other enameled products.

Many manufacturers tell us they have reduced their losses 50% to 75% by using Armco Iron for enameling. And metal conservation is one of the most important movements of the present day.

More than 75 prominent stove manufacturers employ Armco Iron. Many of them use it for the enameled parts. It is also used exclusively by leading manufacturers of enameled refrigerators, kitchen-cabinets, table-tops. The Grand Rapids Refrigerator Co. of Grand Rapids, Mich., make their well-known Leonard Cleanable Refrigerator on a base of Armco Iron. The Porcelain Enamel Mfg. Co. of Baltimore are large makers of Armco Iron enameled signs and other specialties.

We'll send you names and addresses of other reliable manufacturers.

Write for Armco Iron literature applied to your needs. Ask for the advice of our specialists in sheet and plate metal service.

THE AMERICAN ROLLING MILL COMPANY, Dept. 905, Middletown, Ohio

FOOD keeps the soldiers going as shells keep the guns going. You can't make the shells, but you can save the food. Do your bit.

The trade-mark ARMCO carries the assurance that iron bearing that mark is manufactured by the American Rolling Mill Company with the skill, intelligence, and fidelity associated with its products, and hence can be depended upon to possess in the highest degree the merit claimed for it.

AMERICAN ARMCO INGOT IRON

PORCELAIN ENAMEL ON ARMCO INGOT IRON

- This full-page advertisement from *The Saturday Evening Post* ran on March 16, 1918, while World War I was still being fought. One of the earliest examples of Armco co-operation with enamelers, it was designed to promote the sale of porcelain enameled products by impressing the nation's housewives with their utility and beauty.
- In 1914 Armco became the first steel producer to advertise the advantages of special-purpose sheet metals in popular magazines. This educational advertising has continued ever since. Along with product development and improvement, it has helped sell millions of porcelain enameled products.
- And Armco consumer advertising is still on the job, building greater acceptance for your products, laying the groundwork for a wider post-war market. The American Rolling Mill Company, 1211 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

HELP FINISH THE FIGHT—WITH WAR BONDS

Maximum Purity-Minimum Contamination

Orefraction Zircon

FOR

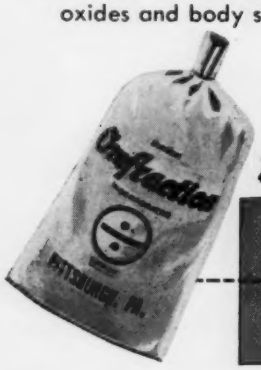
Spark Plugs
Refractories
Electrical Porcelain
Enamels
Glass
Opacifiers
Glazes
Cements

★ LOW COEFFICIENT OF EXPANSION
★ SUPER REFRACTORINESS
★ HIGH INDEX OF REFRACTION
★ HIGH DIELECTRIC PROPERTIES

OREFRACTION RUTILE now available for color oxides and body stains (High TiO_2 Content)

Exclusive methods of preparation, patented equipment for separation and purification and petrographic and chemical controls assure you a trouble-free product.

Orefraction's new milling system produces a milled Zircon of exceedingly pure chemical analysis.



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Stilts
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Spurs
Saggers—Bisque ovals only
Crucibles
Modeling Clay

We Sell–

Ball Clays—Kentucky
Sagger Clays—Kentucky
Ground Fire Clay—Ohio, Pennsylvania
Bitstone—all sizes
Fire Brick
Domestic Whiting

THE POTTERS SUPPLY COMPANY
EAST LIVERPOOL, OHIO

WHY SO MANY CALL US... "THE LITHIUM PEOPLE"

THERE'S A STORY going around in ceramic circles that we are "the lithium people." We like our nickname even though lithium is only one of our many products. Possibly the story, whose origin we do not know, grew from these facts:

WE KNEW LITHIUM WAY BACK WHEN

Foote was investigating lithium salts years before they were regarded of value commercially. A few facts were gradually broadened by Foote Engineers and Researchers into a considerable technical knowledge of manufacturing and application—fortunately in time to be of use in the war.

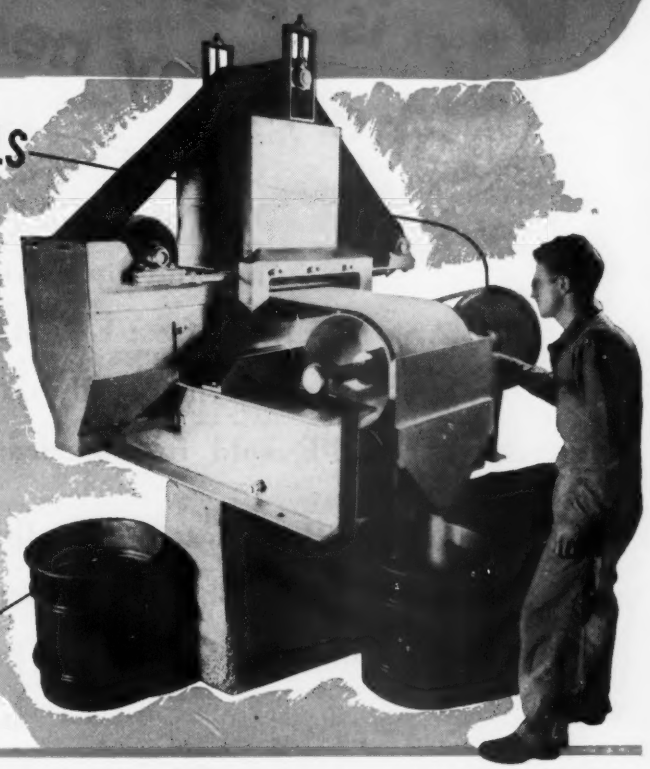
WAR PYRAMIDS DEMANDS

War needs made it necessary for us to expand our lithium plant to six times its pre-war capacity—becoming actually one of the largest in the world. To further refinements in manufacturing were added processing of additional lithium salts.

A LITHIUM CARBONATE SERVICE

Growth in experience and facilities, coupled to Foote's long familiarity with ceramic requirements, means lithium carbonate and other salts for you made by ceramic-minded technicians, serviced by ceramic engineers. You are invited to use our store of information.

THIS DIVORCES ORES AND MINERALS



Discharge end of a magnetic separator in one of the Foote plants. This machine, believed to be one of the largest of its type in existence, is typical of the modern equipment spearheading Foote's experience in processing ores, minerals, alloys and chemicals.

Foote
MINERAL COMPANY
A Step Ahead in Industrial Ores and Chemicals

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West Coast Repr.: Griffin Chemical Co., San Francisco, Calif. • English Repr.: Ernst B. Westman, Ltd., London, Eng.

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KRYOLITH comes in 500 lb. barrels and 100 lb. bags. Order your supply today!

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Refractories Division

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Manufacturers of
PYROMETER TUBES AND INSULATORS
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The oldest and best cupra-ammonium finish for
POTTERY FILTER FABRICS.
This finish gives the fabric a smooth, lustrous, metallic surface—no fibres to catch and break the clay cake as it comes away in one perfect piece—filters better and faster than untreated cloths—requires fewer washings and is easier to keep clean—more continuous operation of your press—lower labor costs and a larger and better product with the same machinery.
The fabric is mildew proofed—has an increased tensile strength—has a longer useful life.
This means larger profits for you.
Consult your bag manufacturer or write to,
Metakloth Company, Lodi, N. J.

CLAYS
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for
HEATING ELEMENTS
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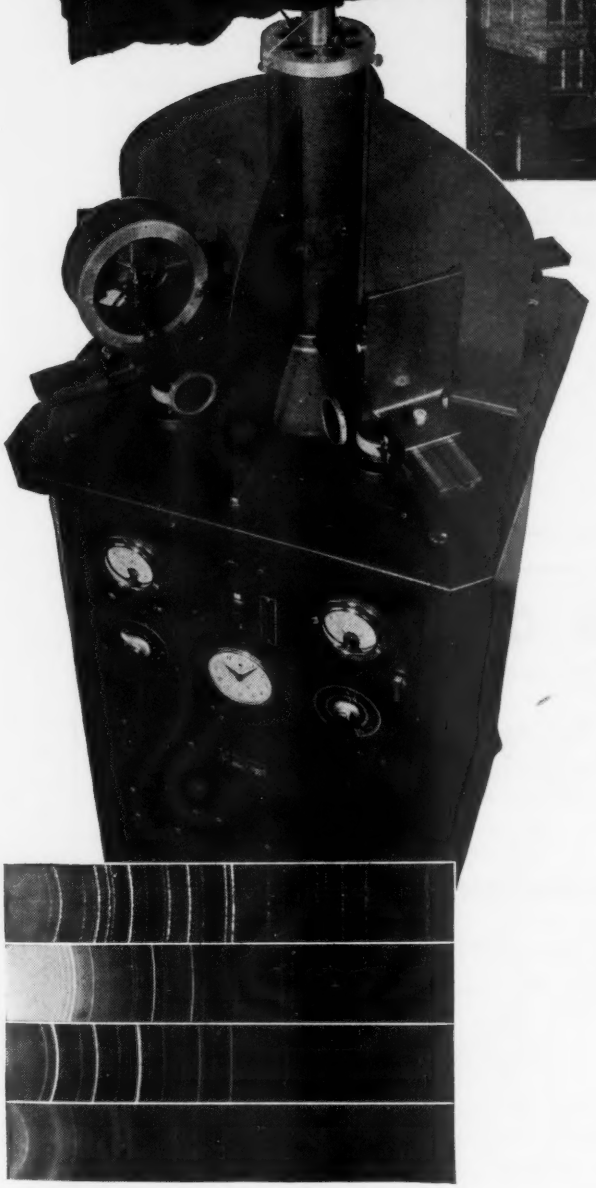

Defraction patterns of Red Ruby, Antimony Enamel, Bohnite, and Enamel Clay.

X-RAY ANALYSIS *Speeds* CERAMIC RESEARCH

• The X-ray diffraction unit reveals the structure of crystalline matter, shows the form and dimension of many opacifiers, colorants, and minerals. Such fundamental information helps assure a sound and direct attack on ceramic problems. X-ray has guided Harshaw research in formulating more opaque, easier working frits; cleaner, more stable ceramic colors; more effective opacifiers.

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Announcement

WE are proud to announce that the Spencer Lens Company will operate under the name of its parent company after June 30, 1945.

Please change your records to show our new name:

AMERICAN OPTICAL COMPANY
Scientific Instrument Division
Buffalo 11, New York

The name SPENCER, as in the past, will be a hallmark appearing only on the finest scientific instruments.

Since 1935, when the Spencer Lens Company was purchased by the American Optical Company, facilities for research and manufacturing have been greatly increased.

The change of name and closer integration with the American Optical Company, the largest producer of ophthalmic products in the world, will provide new opportunities to improve products and render better service.

Spencer Lens Company
BUFFALO 11, NEW YORK
Scientific Instrument Division of
AMERICAN OPTICAL COMPANY

JOURNAL OF THE SOCIETY OF GLASS TECHNOLOGY

A bimonthly Journal containing the original papers communicated to the Society together with abstracts of other papers covering the whole field of glass technology.

Membership of the Society is open to all persons, or associations of persons, interested in glass.

Orders and enquiries should be addressed to—

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Society of Glass Technology,
The University,
"Elmfield," Northumberland Road,
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Turbine Type Pressure Blowers
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Cooling Fans

Place your air handling problems in our hands . . .
Our 50 years' experience assures efficient results.

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GLASS TECHNOLOGIST

Experienced in glass research and production. Position involves research and pilot plant work with unusual glasses. Excellent postwar opportunity with successful progressive Midwest concern. Graduate ceramist or engineer preferred. Address Box 283F, The American Ceramic Society, Inc., 2525 N. High St., Columbus 2, Ohio.

NOW!

Extra Sales Appeal For Porcelain Enameled Products

New markets can be opened and sales in old markets can be expanded with Inland Ti-Namel—the new alloy steel porcelain enameling base which has many special appeals to buyers and consumers.

The thin finish coat, applied direct on the base metal, is less subject to damage than are the multi-coats commonly applied to porcelain enameled ware. The finish on Ti-Namel—in any color, including white and pastel shades—is unsurpassed. Its greater resistance to sag permits the use of large panels in lighter gages.

In addition to greater market possibilities, Inland Ti-Namel offers important advantages in the shop—forming qualities equal to the best deep drawing steel, elimination of ground coat, lower and shorter firing temperatures, greater output per square foot of floor space, etc.

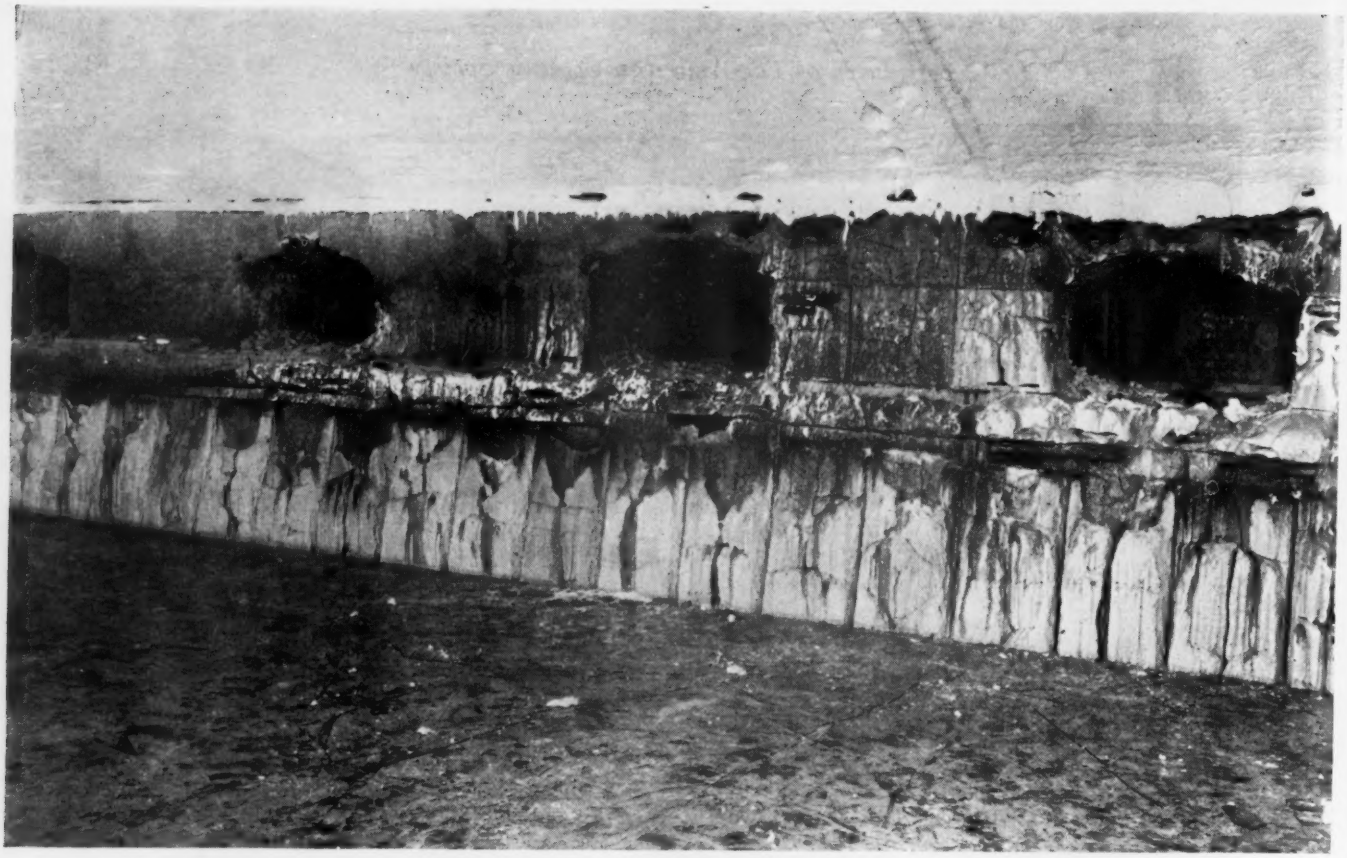
Inland has issued a new Ti-Namel Bulletin. Write for a copy today!

Pending patent applications on the new enameling process and product made thereby are owned jointly by Inland Steel Company and Titanium Alloy Manufacturing Company under trust agreement.

Bars, Floor Plate, Piling, Plates, Rail, Reinforcing Bars, Sheets, Strip, Structurals, Tin Plate, Track Accessories.

Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill.
Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

INLAND TI-NAMEL



PROGRESS WITH CORHART

The Corhart* Electrocast balanced tank shown above recently completed its second Corhart campaign on flint bottle glass. During its first Corhart campaign, the tank contained Corhart Electrocast throughout the melting-end sidewalls, throat, dog-house, and in portions of both the superstructure and the melting-end bottom. . . . For the second campaign, the use of Corhart Electrocast was extended to include additional superstructure, and a larger portion of the melting-end bottom (as well as the entire refining-end sidewalls, and a portion of the refining-end bottom).

The following is the operating data for both campaigns. We believe you will agree that the increased production figures fully justify the description above—"*Progress* with Corhart."

	8/14/39 to 1/8/42	3/5/42 to 1/19/45	Percent of Increase
Melting Area	770.5	770.5	0.0%
Total Days Life	870	1,051	20.8%
Total Operating Days	803	1,018	26.8%
Total Tons Glass Produced	75,631	102,899	36.0%
Tons Glass Per Day (Life)	87	98	12.6%
Tons Glass Per Day (Operating)	94	101	7.4%
Tons Glass Per Sq. Ft. Per Life	98.15	133.54	36.0%

On the third Corhart rebuild of this tank, now completed, the use of improved Corhart Electrocast products was extended. Further progress is expected. Corhart Refractories Company, *Incorporated,* 16th and Lee Streets, Louisville 10, Kentucky.

*Not a product, but a registered trade-mark.

QUALITY ECONOMY ENDURANCE

CORHART ELECTROCAST REFRACTORIES

Ceramic Abstracts Section

Compiled by

THE AMERICAN CERAMIC SOCIETY

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Vol. 24 **June 15, 1945** **No. 6**

Abrasives

Grinding to ten-thousandths inch on a high-production basis. RALPH PRICE. *Machinery* [N. Y.], **50** [8] 154–55 (1944).—Methods and equipment used are described. E.W.R.

Grinding-wheel balancing equipment. ANON. *Machinery* [N. Y.], **50** [7] 232–33 (1944).—A balancing kit consisting of a wheel-holder, stand, and arbor is available for facilitating the balancing of wheels up to 8 in. in diameter. It is manufactured by the Pope Machinery Corp. E.W.R.

Hydraulic truing device for lapping machine. ANON. *Machinery* [London], **64,** 332 (1944); abstracted in *Ind. Diamond Rev.*, **4** [47] 220 (1944).—The vertical lapping machine for piston rings is manufactured by H. & W. Armstrong, Leeds. Great importance has been attached to the design and construction of the truing device because the accuracy and finish of the work depend so much on the condition of the wheel surfaces. P.G.

Norton Alundum abrasive wheel. ANON. *Machinery* [N. Y.], **50** [7] 238 (1944).—Grinding wheels of Norton Co. 57 Alundum abrasives are now available for general use. This improved aluminum oxide product is particularly adapted to cylindrical, centerless, and internal grinding and snagging operations at low speeds, and wheels are available in various sizes, structures, bonds, grain sizes, and grades. E.W.R.

Securing fine surfaces by grinding: X, Lapping. H. J. WILLS AND H. J. INGRAM. *Machinery* [N. Y.], **50** [7] 211–13 (1944).—The authors describe the factors that govern fine surface quality and the means by which this quality can be obtained. The various techniques, materials, and principles of lapping are discussed. **XI, Machine lapping.** *Ibid.*, [8] 159–60.—Present machines can produce flat work lapped to within 0.000025 in. for dimension and a few millionths for both straightness and parallelism on a commercial basis. Abrasive wheels, cast-iron laps with granular abrasive, and machines using coated paper or cloth are used for lapping. Recommendations for various lapping operations are listed. For Part **IX** see *Ceram. Abs.*, **23** [4] 66 (1944). E.W.R.

Theoretical aspects of the hardness of hard substances. OSKAR MEYER AND WALTER EILENDER. *Arch. Eisenhüttenw.*, **11** [11] 558–62 (1938); translated in *Ind. Diamond Rev.*, **5** [52] 58–61 (1945).—The authors review the hardness, properties, and chemical composition of sintered carbides, nitrides, and certain other elements. Diamond shows the highest values of all listed materials. Investigations showed that with reduced grain size there is an increase in hardness, partly due to the increase in the area of the grain boundaries; an increase in the proportion of the binder reduces the hardness. With constant binder volume and grain size and comparable conditions of production, the hardness of a sintered alloy depends only on the chemical and physical properties of the carbides and nitrides used. Base hardness calculations for carbides are given. 29 references. P.G.

BROCHURE

Workshop Precision Grinding. 4th ed. Published by Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England, 1944. 124 pp. Reviewed in *Ind. Diamond Rev.*, **5** [51] 40 (1945).—This well-illustrated brochure is not only an extremely good introduction to the working principles for all types of precision grinding machines, but it also describes their main elements such as workheads, spindles, bearings, and steady rests. In addition, useful hints on the operation and maintenance of the machine are given. The truing and balancing of grinding wheels are treated, and emphasis is laid on the fact that the diamond should not be used in one position until a flat is developed upon it. This book can be highly recommended to all those who are in any way concerned with precision grinding, and it will well repay careful reading.

PATENTS

Abrading-machine knee. L. E. THOMPSON. U. S. 2,375,149, May 1, 1945 (Sept. 16, 1943). 10 claims. (Cl. 51-233).

Abrading wheel dressing machine. G. F. EGLINTON (Lincoln Park Industries, Inc.). U. S. 2,373,882, April 17, 1945 (Nov. 3, 1943). 11 claims. (Cl. 51-35).

Apparatus for grinding cutting tools, e.g., cutters for use in sound recording. W. HARRIS. Brit. 567,530, Feb. 28, 1945 (June 21, 1943).

Cam-lapping machine. H. S. INDGE AND C. W. LUND (Norton Co.). U. S. 2,373,640, April 17, 1945 (June 26, 1943). 11 claims. (Cl. 51-64).

Centerless grinder. HARRY KOPLIN, A. R. SLATE, AND D. A. HAUNOST (Zephyr Laundry Machinery Co.). U. S. 2,375,306, May 8, 1945 (Nov. 6, 1942). 3 claims. (Cl. 51-168).

Crank grinding machine. H. A. SILVEN (Norton Co.). U. S. 2,375,737, May 8, 1945 (Sept. 11, 1944). 10 claims. (Cl. 51-72).

Device for dressing grinding wheels, etc. J. Y. BLAZEK (Lempco Products, Inc.). U. S. 2,374,726, May 1, 1945 (May 22, 1943). 7 claims. (Cl. 125-11).

Device for grinding the pistons and measuring chambers of water meters. F. B. SIMPSON (one third to Charles Plauche and one third to Harrington-Hoch, Inc.). U. S. 2,374,784, May 1, 1945 (Oct. 19, 1942). 7 claims. (Cl. 51-26).

Device for sharpening the blades of cutting or shearing implements. R. L. GOLD, R. E. JOHNSON, AND W. BUN. Brit. 567,540, Feb. 28, 1945 (Oct. 4, 1943).

Face grinding. H. P. TROENDLY AND FRANK BARES (Torrington Mfg. Co.). U. S. 2,375,333, May 8, 1945 (Nov. 14, 1942). 19 claims. (Cl. 51-118).

File-sharpening machine. A. H. SCHWARTZWELDER. U. S. 2,375,703, May 8, 1945 (May 5, 1944). 3 claims. (Cl. 51-33).

Grinder. C. A. WIKEN (Delta Mfg. Co.). U. S. 2,374,716, May 1, 1945 (Feb. 28, 1942). 14 claims. (Cl. 51-109).

Grinding, cutting, or boring machine. HAROLD FRAUENTHAL AND H. M. LOCHRANE (Lochrane assignor to Frauenthal). U. S. 2,374,928, May 1, 1945 (Nov. 9, 1942). 9 claims. (Cl. 51-56).

Grinding, lapping, or polishing machine for diamonds or other crystals. F. C. JEARUM. U. S. 2,374,751, May 1, 1945 (April 6, 1943; in Great Britain May 16, 1942). 9 claims. (Cl. 51-229).

Grinding machine. W. W. PERKINS AND ELLSWORTH ANNIS (Reid Bros. Co., Inc.). U. S. 2,373,336, April 10, 1945 (April 18, 1941). 7 claims. (Cl. 51-92). C. R. WILLIAMS (Atlantic Service Co., Inc.). U. S. 2,375,604, May 8, 1945 (Jan. 2, 1942). 11 claims. (Cl. 51-135). W. M. BURA (Norton Co.). U. S. 2,375,619, May 8, 1945 (April 26, 1941). 21 claims. (Cl. 51-127). U. S. 2,375,620, May 8, 1945 (July 11, 1941). 12 claims. (Cl. 51-127).

Guard for emery wheels, etc. ANDREW FLOHR AND A. J. FLOHR. U. S. 2,374,988, May 1, 1945 (Nov. 19, 1943). 7 claims. (Cl. 51-269).

Honing and lapping machines. R. H. WINDSOR AND E. GASPAR. Brit. 568,244, April 5, 1945 (Oct. 20, 1943).

Machine for grinding metal. EDGAR BANNISTER (D. Gilson and Co., Ltd.). U. S. 2,375,340, May 8, 1945 (Oct. 28, 1942; in Great Britain Nov. 29, 1941). 20 claims. (Cl. 51-33).

Making abrasive articles. F. A. UPPER (Carborundum Co.). U. S. 2,375,263, May 8, 1945 (June 27, 1944). 8 claims. (Cl. 51–297).—1. The method of making bonded abrasive articles from a plurality of superimposed layers of abrasive-included felted fibrous sheet material which comprises assembling a number of sheets of previously sized abrasive-included fibrous web material in superimposed relation, subjecting the assembled sheets to an initial consolidating action to form therefrom a compressed slab of the desired thickness, cutting out pieces of the desired size and shape from the compressed slabs, and further consolidating the cutout pieces of compressed slab material to form abrasive articles of the desired thickness.

Making mineral-wool products. H. T. COSS (Johns-Manville Corp.). U. S. 2,375,284, May 8, 1945 (Jan. 28, 1942). 8 claims. (Cl. 154-28).

Method of lapping. F. J. KENT (Sipp-Eastwood Corp.). U. S. 2,375,003, May 1, 1945 (Jan. 16, 1943). 1 claim. (Cl. 51-118).

Milling and grinding machine. WALTER UMBDENSTOCK (Raymond T. Moloney). U. S. 2,375,052, May 1, 1945 (Sept. 5, 1942). 5 claims. (Cl. 51-225).

Plastic abrasive pad. L. K. RIMER (James H. Rhodes & Co.). U. S. 2,375,585, May 8, 1945 (May 14, 1943). 2 claims. (Cl. 51-185).

Surface and contour grinder. ALFRED PIZZIGONI. U. S. 2,375,323, May 8, 1945 (Feb. 19, 1944). 4 claims. (Cl. 51-34).

Surface-grinding machine. P. V. MILLER (Taft-Peirce Mfg. Co.). U. S. 2,375,128, May 1, 1945 (April 22, 1943). 7 claims. (Cl. 51-237).

Thread-grinding machine. H. V. CHRISTENSEN (Michigan Tool Co.). U. S. 2,375,079, May 1, 1945 (Feb. 22, 1943). 7 claims. (Cl. 51-142).

Valve grinder. B. C. AUST. U. S. 2,373,283, April 10, 1945 (Aug. 6, 1943). 1 claim. (Cl. 51-29). J. A. WILLIAMS, SR. U. S. 2,373,522, April 10, 1945 (Jan. 28, 1944). 1 claim. (Cl. 51-29).

Work support adjusting mechanism for machine tools. HARRY ARTER (Arter Grinding Machine Co.). U. S. 2,375,172, May 1, 1945 (Sept. 3, 1940). 8 claims. (Cl. 51-216).

Art and Archeology

Figurines, made in U.S.A. ANON. *Ceram. Ind.*, **43** [5] 66–76 (1944).—40 illustrations. See *Ceram. Abs.*, **24** [2] 36 (1945). H.T.

New diagnostic method of testing and training color perception. I. DVORINE. *Amer. Jour. Optometry*, **21** [6] 225–35 (1944).—An improved diagnostic method shows that many persons formerly called color-blind really lack discriminatory ability for certain color combinations of approximately the same intensity. By new training methods, a gradual improvement can be produced. A.P.

PATENTS

Bottle design. F. E. ANSELL. U. S. 140,791, April 10, 1945 (Dec. 26, 1944). (Cl. D58-6).

Bowl design, etc. W. L. ORME. U. S. 141,034, May 1, 1945 (Jan. 26, 1945). (Cl. D36-2).

Design for a glass decanter, etc. C. L. FORDYCE (Pitman-Dreitzer & Co., Inc.). U. S. 140,853, April 10, 1945 (Feb. 16, 1945). (Cl. D36-2).

Forming transferable silk-screen stencils. E. C. BOWERS. U. S. 2,374,524, April 24, 1945 (May 19, 1941). 6 claims. (Cl. 101-128.4).

Glaze for ceramic objects. DEUTSCHE GOLD- UND SILBER-SCHEIDEANSTALT VORM. ROESSLER. Belg. 442,475; *Chem. Zentr.*, **1943, I** [6] 665.—The glaze consists principally of K_2O, SiO_2, and ZnO. The latter can be replaced by BaO, CaO, or BeO. M.HA.

Goblet, etc., design. W. L. ORME. U. S. 140,826, April 10, 1945 (Jan. 26, 1945). (Cl. D36-8).

Cements

Chemical resistance of cements to calcium sulfate. LUIGI SANTARELLI. *Chimica e industria* [Italy], **24** [9] 323–27 (1942); abstracted in *Chem. Zentr.*, **1943, I** [12] 1314.—Seven types of cement of different mechanical strength and Al_2O_3 and CaO moduli were tested, by the Blondiau-Anstett method, for their resistance to $CaSO_4$ for up to two years. The cements without an addition of pozzuolana and with an Al_2O_3 modulus greater than 0.64 show an immediate increase in volume in the test, while Fe-rich cements showed an increase only after several months. While aluminate-rich cements show a less pronounced effect of the pozzuolana addition, a practically

constant volume was shown after some time in the Fe-rich cements to which natural and especially synthetic pozzuolana had been added. This is ascribed to the lowering of the pH value (< 12) in the equilibrium solution. Lowering of the CaO modulus has the same effect, giving the cements almost complete chemical stability. M.HA.

Hydration of stucco gypsum. B. TAVASCI. *Chimica e industria* [Italy], **24** [9] 309–11 (1942); abstracted in *Chem. Zentr.*, **1943, I** [11] 1145.—A method for the microscopic-petrographic examination of precipitated, calcined, and set gypsum after etching the section with 10% alcohol is described. The typical needle-shaped crystals of the dihydrate cannot be found in the set and hardened gypsum mass; short crystals exist such as are observed in the crystallization of a pure metal out of its melt. M.HA.

Qualitative and quantitative determination of free lime in Portland cement. B. TAVASCI AND A. CERESETO. *Chimica e industria* [Italy], **24** [9] 312–15 (1942); abstracted in *Chem. Zentr.*, **1943, I** [12] 1314.—The various methods are reviewed, and the reasons for incorrect results are explained. A microscopic-petrographic method is described for use with etched sections of set cement paste. This method also permits a distinction between CaO and $Ca(OH)_2$, owing to the different refractive indices. M.HA.

PATENTS

Portland cement and method of retarding the setting rate thereof. M. A. SWAYZE (Lone Star Cement Corp.). U. S. 2,374,628, April 24, 1945 (May 14, 1940). 7 claims. (Cl. 106-92).—1. A method of preparing Portland cement to retard the setting rate thereof at elevated temperatures comprising distributing throughout the dry cement about 0.1% of a mixture of dextrin and wheat flour.

Slow-setting cement. L. S. BROWN (Lone Star Cement Corp.). U. S. 2,374,581, April 24, 1945 (Feb. 1, 1940). 3 claims. (Cl. 106-89).—A cement composition for cementing oil wells having all of the characteristic properties of Portland cement except for a retarded setting rate, the composition consisting principally of Portland cement and an effective quantity of 0.01 to about 1% by weight of a bicarbonate to retard the setting rate of the cement at elevated temperatures.

Treatment of hydraulic cement compositions. C. A. OWENS. U. S. 2,374,562, April 24, 1945 (March 9, 1939). 12 claims. (Cl. 106-89).—11. In a method of rendering innocuous the available lime content of hydraulic cements, the st.p of converting readily soluble lime components of hydraulic cement into relatively insoluble metallic compounds by introducing a water-soluble reagent from the group consisting of chromic anhydride, manganese trioxide, molybdic acid, and substantially neutral water-soluble salts of molybdenum, tungsten, manganese, and vanadium into the gauging water used in mixing hydraulic cement compositions in the proportion of about 0.2 to 1.0% of such reagent by weight of the gauging water.

Enamel

Electrostatic spraying of porcelain enamels. JAMES B. WILLIS. *Jour. Amer. Ceram. Soc.*, **28** [5] 121–33 (1945).—17 figures.

Enamel industry on the alert. G. H. SPENCER-STRONG. *Ceram. Ind.*, **44** [4] 70–71 (1945).—Postwar modernization of the enamel industry can be expected. Substitute materials introduced during the war have a good chance of being used to greater extent after the war. New processes that may revolutionize the industry are described, e.g., the application of finished coat enamels direct to the metal and the Kolene salt method (*Ceram. Abs.*, **24** [4] 69 (1945)), which replaces sandblasting and conventional cleaners. H.T.

Porcelain enamel an accepted construction material: II. ANON. *Ceram. Ind.*, **43** [5] 51–52 (1944); for Part I see *Ceram. Abs.*, **24** [2] 37 (1945). H.T.

Porcelain enamel on steel components in the postwar era. G. H. MCINTYRE. *Steel Processing*, **31** [2] 100–102 (1945).—The pressed metal industry, steel, and especially the porcelain enamel industry will face postwar competition from plastics, light-metal alloys, ceramics, plywood, glass, and clay products which will necessitate considerable research work. McI. discusses porcelain enamel raw materials, coatings, improved enameling steels, enamel finishes, and colors. 3 photographs. M.R.

Spot tests for the detection of alloying elements in steel. B. S. EVANS AND D. G. HIGGS. *Analyst*, **70** [828] 75–82 (1945).—Spot tests are described for detecting nickel, chromium, manganese, molybdenum, tungsten, aluminum, copper, lead, titanium, cobalt, selenium, and vanadium. Most of the tests are sensitive to 0.1%. B.C.R.

Systematic testing of all enameling operations. F. A. PETERSEN. *Better Enameling*, **16** [3] 6–9, 22 (1945).—Routine testing of raw materials, materials in process, and the finished product is a sound investment, since more uniform and superior products are obtained with noticeable savings in material and reoperations. 5 illustrations. Also in *Finish*, **2** [3] 21–24, 42(1945). B.C.R.

Theories and factors governing porcelain enameling process. HARRIE E. PARKER. *Ceram. Ind.*, **44** [3] 52–54 (1945).—A humorous description of the art of enameling. 8 illustrations. H.T.

U. S., European continuous enameling furnaces compared. PAUL A. HUPPERT. *Ceram. Ind.*, **44** [2] 61–62; [3] 55–58 (1945).—The smallest American furnace is larger than the average European furnace. The latter is more flexible and utilizes waste heat for drying. American construction is more durable and requires less upkeep. European furnaces use mostly coal, converted into producer gas. Special recuperators are designed for maximum efficiency. On both continents it is apparent that continuous furnaces are a great improvement, suitable for any class of ware and any firing operation. 8 illustrations. H.T.

SEPARATE PUBLICATION

Selection, Care, and Use of Kitchen Utensils. ANON. Published by Enameled Utensil Manufacturers Council. Educational Division, 221 N. La Salle St., Chicago 1, Ill., 1944. 6 pp. Free.—This pamphlet was prepared especially for teachers of domestic science. It outlines the history of the production of porcelain enameled kitchenware from its start in Bohemia in 1830 to the present. A brief description of the manufacturing process is given. Sizes of various utensils are listed, and instructions for cleaning and storing are given. A list of questions and answers that can be used in schoolwork is included. C.S.P.

PATENT

Enamel-coated welded joint. W. G. MARTIN (A. O. Smith Corp.). U. S. 2,374,763, May 1, 1945 (Oct. 10, 1942). 9 claims. (Cl. 285-111).

Glass

Abrasion of glass as related to composition. S. R. SCHOLES. *Jour. Amer. Ceram. Soc.*, **28** [5] 133–36 (1945).—2 figures, 1 reference.

Apparatus for the determination of the heat resistance of glasses. M. R. SAVITSKIĬ. *Legkaya Prom.*, **1** [5] 54–55 (1941); abstracted in *Chem. Zentr.*, **1943, II** [7] 657.—The

apparatus tests simultaneously a large number of glasses (tumblers, beakers, etc.) for their thermal resistance by automatically filling them with boiling water that falls from the same height, with the same velocity, and from the same direction. After cooling to 65°C. for blown glasses and 55° for pressed glasses, they are quenched in water at 20°. M.HA.

Coated Fiberglas fabric for plane hangers at advanced AAF bases. ANON. *Amer. Glass Rev.*, **64** [29] 9 (1945).—Glass cloth coated with either synthetic rubber or vinyl resins is being used by the U. S. Army Corps of Engineers for curtains, side walls, and ends in airplane hangars at advanced bases. Shipping weight is saved and assembly is speeded. Glass cloth was selected because of its resistance to the effects of mold and fungus, its high strength-weight ratio, ease of fitting around plane fuselages, and immunity to heat or cold. A.P.

Deposition of lead-sulfide mirrors on glass. P. C. SMETHURST. *Jour. Sci. Instruments*, **22** [3] 52–54 (1945).—The basic reason for the improved permanence of mirrors is that they are deposited on a layer of metallic hydroxide that has been adsorbed on the surface of the glass support. The copper hydroxide process involves a separate solution to produce the adsorbed layer. S. describes both the copper hydroxide and the lead hydroxide processes. G.A.K.

Destruction of antique glasses: I, Equilibriums and reaction velocities in systems glass–gas. J. A. HEDVALL AND R. JAGITSCH. *Chalmers tekn. Högskolas Handl.*, **1943,** No. 19, pp. 5–33; abstracted in *Chem. Zentr.*, **1943, II** [6] 556–57.—Destruction of glass in air is due principally to reactions between glass and gases. Gas adsorption on the glass is the first stage, followed by solution of the gas in the glass under chemical reaction and glass disintegration. Examinations of destroyed glasses have shown that destruction in air begins with water adsorption which continues in increasing hydration and is followed by carbonate formation. The velocity of the destruction is a function of the alkali content of the glass and is influenced by temperature and air humidity. Investigations on a splinter of an antique glass at 20°, 150°, 280°, 400°, and 560°C. confirm the theories of the importance of glass composition and the role of water in glass disintegration. Every glass forms in air a thermodynamic unstable system, which must disintegrate in time. A protective layer or film on antique glass is therefore of use only after the vacuum treatment for removing the already absorbed gases, as even apparently unattacked antique glasses have already absorbed gas and do not yet represent a stable system in equilibrium. The protective layer of transparent artificial resin is then applied in the vacuum. M.HA.

Effect of zirconium oxide on the chemical and thermal properties of glass. M. FANDERLIK AND Z. SCHAEFER. *Sklářské Rozhledy*, **20,** 41–45 (1943); abstracted in *Chem. Zentr.*, **1943, II** [10] 941.—In a glass of 70 SiO_2, 13 Na_2O, 0.5 Al_2O_3, and 12% CaO, the latter was replaced by increasing amounts of ZrO_2. Even with 4% ZrO_2, the glasses do not require a longer melting period at 1450°C.; the viscosity of the glass at this temperature is greater. The softening temperature of glass with 4% ZrO_2 is 25% higher than that of the original glass. This is also true of the transformation temperature, which is about 565°. Thermal expansion drops linearly with increasing ZrO_2 content. Up to 4%, the cubic expansion coefficient (6.9) and the linear expansion coefficient (2.3) can be used for thermal expansion. Chemical resistance of the glass increases with ZrO_2 content; it therefore belongs to the first hydrolytic class. Density increases slightly with ZrO_2: original glass, 2.438; with 4% ZrO_2, 2.483. M.HA.

Fiberglas insulation for wire and cable. ROY J. BLACK. *Wire & Wire Products*, **20** [4] 278–82 (1945).—Important properties of Fiberglas for electrical applications are its high temperature resistance, tensile strength, space factor, moisture and acid resistance, and thermal conductivity (approaching that of solid glass). B. describes the manufacture of magnet wire, aircraft ignition cable, and other wires. Suggestions are made on the packaging and handling of yarn and the maintenance of machine parts used in braiding. B.L.

Glass fibers for insulation. ANON. *Heating & Ventilating*, **42** [3] 59–61 (1945).—Various types of Fiberglas insulation are discussed, with specifications and physical data. 6 illustrations. M.R.

Glass plant for tomorrow. JOHN CRESSWELL PARKIN. *Ceram. Ind.*, **44** [4] 62–66 (1945).—The principles suggested in this excerpt from the author's thesis for the Bachelor of Architecture degree represent some of the most advanced thoughts in modern industrial engineering practice. 10 illustrations. H.T.

Glass tube cutting. ANON. *Ind. Diamond Rev.*, **5** [51] 40 (1945).—The three methods of cutting glass tubes are described: flame cutting, the hot-wire method, and the use of thin cutting wheels. P.G.

Low refraction and dispersion of beryllium fluoride glass. A. G. PINCUS. *Jour. Optical Soc. Amer.*, **35** [1] 92 (1945).—Beryllium fluoride glass is highly hygroscopic, but by special techniques specimens have been polished as prisms and measured on the spectrometer with the following results: $N_C = 1.2739_2$, $N_D = 1.2747_5$, $N_F = 1.2764_9$, $N_F - N_C = 0.00257$, and $\nu = 106.9$. A.P.

Millions of feet of Foamglas in walls, floors, ceilings, and exteriors doing job for war. ANON. *Amer. Glass Rev.*, **64** [29] 10, 18 (1945).—Foamglas makes possible the regulation of temperature, humidity, and condensation over large areas. The necessity of reinsulating at intervals is eliminated. Applications are described in the processing of rubber, lumber, textiles, chemicals, and petroleum and for frozen-food lockers. For interior workrooms Foamglas is applied in core walls and partitions, where it may be faced with any type of tile, brick, or board. An asphaltic mortar is recommended in core-wall applications. In interior partitions application methods using mechanical supports and available materials have been devised. A.P.

New phosphate glass. ANON. *Science News Letter*, **47** [6] 84 (1945).—From aluminum metaphosphate can be manufactured glass that transmits a substantially greater amount of ultraviolet light. Phosphate glasses show improved color control, melting and working characteristics, and resistance to some acids. Phosphate glasses may be used in windowpanes of hospitals, in optical glass, and in electrical insulators. G.A.K.

New Pittsburgh Plate development combines good aircraft windshield with gunsight reflector. ANON. *Amer. Glass Rev.*, **64** [27] 10, 17 (1945); see "Pittsburgh. . .," and "Sighting . . .," *Ceram. Abs.*, **24** [5] 88 (1945). A.P.

Post-mortem observations of glass tanks. WILLIAM HORAK. *Ceram. Ind.*, **44** [3] 60–65 (1945).—A post-mortem examination of a glass tank can show excessive wear of refractories in certain places or the sources of stones, knots, and cord conditions that cannot be found during the tank's operation. By chemical analysis it is possible to trace cords and other defects to certain refractories in the glass tank. 3 illustrations. H.T.

Stourbridge "ouvriers de verre." M. SCHOFIELD. *Glass*, **21** [9] 231–32, 234 (1944).—A historical account of Stourbridge glassmaking is given. B.C.R.

Town gas in the processing of glass tableware. J. A. TOMES. *Gas Jour.*, **245** [4262] 123–25; [4263] 147–53 (1945); *Gas World* [*Ind. Gas Supp.*], **18** [2] 5–9 (1945).—T. gives a detailed account of the manufacture of glass tableware in the Stourbridge district of England and shows to what extent city gas is employed in the process. The subject is considered under the following headings: (*a*) melting of raw materials in pot furnaces, (*b*) furnace pots, (*c*) reheating of the ware for shaping, (*d*) annealing, (*e*) cracking off and edge fusion, (*f*) reannealing, and (*g*) decorating and polishing. City gas (C.V. about 470) was used temporarily in place of producer gas in a 10-pot furnace, when it was found best to introduce it through an open pipe sealed into the producer-gas main, which was closed by a stopping on the producer side. No comparative figures are given, but 27 therms of city gas per hour were required to hold this furnace at working temperature. The pot furnaces are fully insulated externally but do not

exceed an efficiency of 12 to 18%. City gas is regularly used for small-scale melting and for heating up new pots over a period of 7 days, preparatory to insertion in the furnace; 360 therms are used. The bloom due to S in the city gas is avoided by a special desulfurizing plant. An easily made charcoal absorber is described. Glory holes (small gas-fired oven or muffle furnaces) are used to reheat the tableware during handmaking. The recently devised "permeable lining" furnace has given good economical service for this purpose. This is partly lined with Superfrac, through which the combustion gases are drawn into a collecting chamber surrounded by Selfrac insulating brick. The permeable lining quickly attains a "solid" heat. Annealing is done almost wholly by gas, muffles being preferred, but desulfurizing may change this. Gas is also used for cracking off and edge fusion. [ABSTRACTER'S NOTE: No attempt has been made to condense the considerable amount of information regarding glass practice in the Stourbridge district.] **Discussion.**—The Holmes Maxted sulfur-removal process was first used in 1937 and was applied to gas for tumbler machines. The whole of the gas used in the works passed through an active carbon plant, the S content per 100 cu. ft. being reduced from 18 to 4 grains. The supply for the tumbler machine was passed through an electrically heated converter and reduced to 1 grain per 100 cu. ft.; 2 million cu. ft. were treated by 1 liter of active carbon. L.R.B.

Viscosity's part in dead glass. ANON. *Ceram. Ind.*, **43** [5] 60–61 (1944).—"Dead" glass is glass which gives starting trouble when a tank is shut down and restarted. It is shown that change of viscosity is the source of trouble, originating from change in composition. 3 illustrations. H.T.

Wartime optical glass. ANON. *Optician*, **109** [2810] 7 (1945).—Prewar sand for optical glass was imported into England from Lippe, Saxony; it contained 0.009% iron oxide. Sand from a source developed in the Highlands can be purified to 0.006%. Chance Bros. & Co., Ltd., is manufacturing 80 different varieties of optical glass. Thirty of them are in steady production in 2000 shapes. A.P.

PATENTS

Apparatus for coating glass articles. A. K. LYLE (Hartford-Empire Co.). U. S. 2,375,482, May 8, 1945 (Jan. 24, 1941). 8 claims. (Cl. 91-18).

Apparatus for the manufacture of hollow glassware. A. WYASS. Brit. 567,932, March 21, 1945 (Sept. 16, 1942).

Building block. E. T. PUTNAM (Libbey-Owens-Ford Glass Co.). U. S. 2,375,384, May 8, 1945 (May 25, 1940; Sept. 4, 1941). 4 claims. (Cl. 72-35).

Footgear of glass. KARL WERNER SCHADE. Ger. 729,378; abstracted in *Chem. Zentr.*, **1943, I** [11] 1206.—The shoe, especially its upper part, is made of glass wool or glass threads with interwoven or inserted metal threads. Glass and metal are electrically heated in such a manner that they melt together to form a continuous layer or glass film of sufficient flexibility. The shoe offers protection against humidity and acids. M.HA.

Glass-blowing machine. S. A. FORTER (Forter-Teichmann Co.). U. S. 2,373,820, April 17, 1945 (Sept. 4, 1942). 3 claims. (Cl. 49-19).

Hardening of glass. SOC. ANON. DES MANUFACTURES DES GLACES & PRODUITS CHIMIQUES DE ST.-GOBAIN, CHAUNY & CIREY. Ger. (Austria branch) 160,882; *Chem. Zentr.*, **1943, II** [7] 658.—The process consists in heating the glass to near the softening temperature and subsequent rapid cooling and is characterized in that (1) cooling is done in a bath of molten inorganic salts which do not attack the glass and remain molten below the lowest temperature of treatment; and (2) the bath consists of mixtures of $NaNO_3$ and KNO_3, $NaNO_2$ and KNO_3, $NaNO_3$ or KNO_3 alone, NH_4HSO_4, or KCl and $Cu(NO_3)_2$, and others. For a glass with a softening temperature of about 813°C., a melt of about 67 Na_2SO_4 and 33% KCl is used at a temperature of 800°. After 2 min., the glass is quenched in a melt of 44% $NaNO_2$ and 56% KNO_3 at a temperature of 150°. M.HA.

Laminated glass structure and method of producing. G. B. WATKINS (Libbey-Owens-Ford Glass Co.). U. S. 2,374,056, April 17, 1945 (May 15, 1942). 11 claims. (Cl. 154-2.71). U. S. 2,374,057, April 17, 1945 (June 15, 1942). 10 claims. (Cl. 154-2.71).

Making lens blanks. PERRY JOHNSTON (Pittsburgh Plate Glass Co.). U. S. 2,373,246, April 10, 1945 (March 21, 1941; Jan. 1, 1942). 2 claims. (Cl. 49-79).

Manufacture of dense, strong joints between ceramic bodies or between ceramic and metallic bodies. SIEMENS & HALSKE A.-G. Ger. 734,274; abstracted in *Chem. Zentr.*, **1943, II** [6] 558–59.—The bodies to be joined are heated to above 300°C. and dipped in liquid metals of high melting point (Ni, Fe, Ag, Cu, or their alloys) and of a surface tension which has been lowered, with respect to that of the ceramic bodies, by additions, e.g., by adding 1 to 10% Cu to the liquid Ag. M.HA.

Manufacture of safety glass. I. G. FARBENINDUSTRIE AKT.-GES. Fr. 869,839; abstracted in *Chem. Zentr.*, **1943, I** [11] 1206.—The glass is made with outer or intermediary layers of polyamides, poly-urea, poly-urethan, or their mixtures. An example is given: A 0.5 mm. thick foil of the condensation product of the urethan-N-δ-pelargonic acid is placed under high pressure between glass plates which are heated to 220°C., with subsequent slow cooling. M.HA.

Process of molding glass. CORNING GLASS WORKS. Brit. 567,996, March 28, 1945 (Nov. 6, 1942).

Producing laminated glass structures. J. D. RYAN (Libbey-Owens-Ford Glass Co.). U. S. 2,374,040, April 17, 1945 (Oct. 23, 1941). 8 claims. (Cl. 154-2.81).

Production of safety glass. HUGO SCHNEIDER A.-G. Fr. 876,004; abstracted in *Chem. Zentr.*, **1943, II** [6] 558.—The intermediary layers consist of substances that polarize the transmitted light, e.g., tourmaline or iodine-quinine crystals; the latter are embedded in a cellulose derivative. Gelatin is used as a cement. M.HA.

Production of threads of silicic acid anhydride, especially of quartz. FRANZ SKAUPY AND GUSTAV WEISSENBERG. Dan. 60,120; abstracted in *Chem. Zentr.*, **1943, II** [8] 763 (1943).—At first, intermediary threads are spun from viscous solutions of easily melting silicates, e.g., water glass, which are subsequently treated with acids or acid salts to dissolve the salt component out of them; the acid treatment should last about 15 to 20 min. The threads are then pulled quickly for further stretching through furnaces at a very high temperature at about 1000 ft. per min. M.HA.

Structural Clay Products

Coordination of building units planned for postwar building. M. W. ADAMS. *Ind. Standardization*, **16** [1] 20–23 (1945).—2 drawings. W.D.F.

Possible developments in brick and roofing-tile manufacture. A. B. SEARLE. *Claycraft*, **18** [5] 184–99 (1945).—S. advocates the installation of modern machinery and the beneficiation of clay for the postwar brick and tile industry. The following topics are covered: (1) milling, (2) extrusion, (3) pressing, (4) transport, (5) increasing production, (6) fuel economy, (7) tunnel kilns, (8) annular continuous kilns, (9) large and regular output, (10) labor, (11) export trade, (12) new products, (13) invention, (14) research, and (15) deairing. G.A.K.

Refractories

Action of slag on refractory brick. R. H. H. PIERCE, JR. Presented at meeting of American Ceramic Society, Baltimore, April, 1941; abstracted in *Ind. Heating*, **8** [11] 1308 (1941).

Can clinker-door lintels be permanent? J. G. VOELKER. *Amer. Gas Assn. Monthly*, **27** [3] 140–41 (1945).—V. describes a clinker-door lintel for water-gas generators. With the installation of a steel-welded water-cooled lintel, with integral water-cooled supporting columns serving as door jambs, on an 11-ft. generator, the failures in generator linings (due to insufficient support of the lining wall above clinker doors) now seem needless. This conclusion was reached after seven months' continuous operation. No special arch brick were used, and the circle brick abutting the water-cooled jambs were shaped to interlock with the cool jambs. A study of the quantity of water used and the temperature rise of the water through the lintels on all doors of the generator shows that about 3 million B.t.u. were taken away from the generator in 24 hr. Compared with the life of a silicon carbide generator lining, the water-cooled lintel and jambs may be considered permanent. 7 photographs. M.R.

Characteristics of secondary expansion of some fire-clay refractories. S. M. PHELPS AND R. W. LIMES. Presented at meeting of American Ceramic Society, Baltimore, April, 1941; abstracted in *Ind. Heating*, **8** [12] 1428 (1941).

Flow of heat through granular material. A. L. WADDAMS. *Jour. Soc. Chem. Ind.* [London], **63** [11] 337–40 (1944).—The thermal conductivity of various granular materials was derived from the measurement of thermal diffusivity by a simple radial flow method over the range from room temperature to 200°C. The method and improvements effected based on earlier criticisms are discussed. Data are given for spheres of steel and lead ranging in diameter from $^1/_{16}$ to $^5/_{16}$ in., steel cylinders $^1/_4$ in. in length and $^1/_8$ to $^1/_4$ in. in diameter, and calcite gradings from $^5/_8$ to $^1/_2$ down to -6 $+10$ mesh. Surface conditions affected the results. The apparent conductivity (the conductivity as measured including heat transferred by convection and radiation across the void spaces) of the steel spheres, when adjusted to an arbitrary void space of 39%, fell on a smooth curve tending to flatten from 144×10^{-5} c.g.s. units at $^5/_{16}$-in. diameter to a conductivity of 106×10^{-5} c.g.s. units at $^1/_8$-in. size. This indicates that convective heat transfer is not quite inactive in the voids between the $^1/_8$-in. spheres. Good agreement was found between the present results and those of earlier workers in this field who had been interested in granulated fuels and refractories. L.R.B.

Gas-fired downdraft pyrometric cone equivalent furnace. S. M. PHELPS. Presented at meeting of American Ceramic Society, Baltimore, April, 1941; abstracted in *Ind. Heating*, **8** [12] 1432 (1941).

Nonstop cupola tilting spout. ANON. *Foundry Practice*, No. 68 (March-April, 1944); abstracted in *Trans. Brit. Ceram. Soc.*, **43** [7] 90A (1944).—The bricking of this type of spout is described.

Production of magnesia from sea water in Great Britain. M. DOUGLAS. *Refrac. Jour.*, **21** [1] 11–16, 18–22 (1945).—In the Chesny process, the removal of magnesia from sea water is accomplished by treatment with calcined dolomite, thereby achieving two objectives, removal of magnesia from sea water and removal of lime from the dolomite. The sea water is pretreated to remove the bicarbonate ions by conversion to $CaCO_3$, which is removed by filtering through contact with a previously formed carbonate sludge to break up the supersaturation of calcium carbonate. In the reaction step, turbulence must be avoided because of its harmful effect on the settling rate of the resultant $Mg(OH)_2$ in the thickeners, which maintain a concentration of 80 to 100 gm. per liter and which have a settling rate of 3 ft. per hour. Not more than 70% of the magnesia present in the sea water is removed; exceeding this amount tends to precipitate calcium sulfate, thus contaminating the final product. The precipitated $Mg(OH)_2$ crystals are 5 to 10 μ; the dolomitic magnesia crystals are 20 to 30 μ. The settled slurry, heated to 90°C. for 12 hr., is filtered by continuous rotary vacuum filters. Filter cake is calcined at temperatures determined by the usage of the product. **Discussion.** W. J. REES.—The lime content of the sea-water magnesia varies from 2.5 to 3%, compared with 5% when production started. Prospects of exporting magnesia in the postwar period appear possible. B.C.R.

Progress in antimony recovery. A. G. AREND. *Chem. Age* [London], **49**, 337 (1943); abstracted in *Trans. Brit. Ceram. Soc.*, **42** [11] 130A (1943).—While smaller refiners still use reverberatory furnaces, more success is attained on the large scale by blast-furnace practice. The blast-furnace crucible is lined with a chrome-base refractory with a firebrick backing. Fire-clay linings react to form antimony silicate and aluminate, which spalls off and enters the molten mass. Modern reverberatory furnaces have the side walls above the bath level, and the roof is made of magnesite brick. The metallurgy of antimony extraction is described.

Progressive industry built on research. ANON. *Clay Products News*, **18** [1] 7–13 (1945).—A description is given of Canadian Refractories, Ltd., at Kilmar, Quebec, under the following headings: (1) development, (2) mining, (3) plant, (4) quality control, (5) research, (6) production committee, (7) safety and welfare, (8) plant fire protection, (9) new ideas from outside, (10) type of civic administration, (11) advance planning, and (12) what planning and research will do. Illustrated. G.A.K.

Properties of wollastonite and diopside with admixtures of TiO_2, ZrO_2, and SiO_2. C. R. AMBERG. *Jour. Amer. Ceram. Soc.*, **28** [5] 137–41 (1945).—5 figures.

Repairing a battery of silica coke ovens. C. DINSDALE. Address to the Midland Section, Coke Oven Managers' Assn. *Gas World* [*Coking Sect.*], **28** [341] 54–55 (1941).—A detailed description is given of how a battery of 40 regenerative, vertical-flued coke ovens was let down for repairs. A progressive wave of descending and rising temperature from 1250° to 100°C. was passed through the setting, iron-constantan thermocouples being used to control the rate of heating and cooling. The contraction was 0.5 to 0.6% instead of the 1% expansion which occurred on heating up the new plant. All attachments preventing free movement were removed and not replaced until each oven had been reheated to 650°C. Repairs were made with silica brick and a silica cement that did not set until a high temperature was reached, thus permitting expansion of the brick. The rates of heating and cooling were equal. Five days at 100°C. were allowed for the repair of each oven, six ovens being below 1100°C. at any moment. L.R.B.

Repairing refractories in vertical retorts. J. N. SHORROCK. *Gas Jour.*, **245** [4262] 114–17 (1945).—The desirable features of cements for laying up and patching refractories in gas-retort settings are first discussed. These are (1) strength at working temperatures; (2) good adherence (this is often prevented by using brick which have been stored for long periods under dirty conditions); (3) low drying shrinkage; (4) easy workability; (5) high fusion point; (6) close texture "to minimize fluxing attack and leakage"; (7) that the reversible and permanent thermal dimensional changes should keep in step with the brickwork and that the elasticity should be high (according to unpublished data on thermal expansion by R. E. Jefferson, many silica cements do not conform to this requirement); (8) reasonable air-set to prevent falling out in heating up; and (9) freedom from spalling. Many cements for use with fire-clay brick are satisfactory, but improvements are necessary in silica cements. Investigation showed that a series of cements based on silica-brick grog bonded with phosphoric acid, with additional raw silica flour to aid reaction and fill the voids, possessed the desired properties in a high degree. One such composition was as follows: fine silica flour (90% through 200 I.M.M.), 5 parts; ground silica brick (through 20 I.M.M.), 4 parts; ball clay, 1 part; and phosphoric acid (specific gravity

1.5), 0.5 gal. to 100 lb. dry mixture; 1% bentonite was added to later compositions. The acid was diluted before use, and water was added up to about 33% in the (concrete) mixer. Precautions to avoid silicosis are essential. The final grading of one satisfactory cement was (I.M.M. sieves) +30, 5.0%; −30 +60, 18.5%; −60 +90, 9.5%; −90 +200, 14.0%; and −200, 53.0%. This cement was adherent, easy to apply, fairly strong at 1100°C., and excellent at 1410°C. Large areas of patching proved to have lives of at least 3.25 years. As long as the silica walls were above 1100°C., the considerable volume of air did not affect the brickwork. A suitable cement for regions which do not exceed 1100°C. is a slurry of 6 parts −20-mesh silica-brick grog, 6 parts fine silica flour, 1 part commercial borax dissolved in 4 parts hot water, 1.5% bentonite, and 1.5% phosphoric acid (specific gravity 1.5). This cement fuses at 1430°C. The spray gun is described. An essential feature of the process is the comparative dryness of the material when it reaches the wall. L.R.B.

Sodium silicate's new use. E. F. ARMSTRONG. Address to the Royal Society of Arts, Nov., 1944; reported in *Chem. Trade Jour.*, **115** [2998] 482 (1944).—The steel tube retorts, which contain the calcined dolomite and ferrosilicon briquettes from which magnesium is driven off at about 2000°F. in the Pidgeon process, are protected from the corrosive furnace gases by molten sodium silicate. At 1600°F. the silicate glass is molten and transparent to infrared rays. The 11 retorts in each furnace are imbedded in and coated with sodium silicate. A tube life of many months is obtained, and the silicate glass remains usable for long periods. L.R.B.

Some aspects of insulation: thermal insulation at medium temperatures. A. C. PALLOT. *Jour. Roy. Soc. Arts*, **91**, 122 (1943); abstracted in *Trans. Brit. Ceram. Soc.*, **42** [11] 126A (1943).—P. discusses the loss of heat from exposed surfaces, particularly pipes. Thermal conductivity data on a number of medium temperature insulating materials are included.

PATENTS

Extraction of alumina from ores. R. W. BROWN (Aluminum Co. of America). U. S. 2,375,342, May 8, 1945 (May 18, 1942). 3 claims. (Cl. 23-141).—1. In a process of extracting alumina of high purity from low-grade alumina-bearing ore, including sintering of the ore with quantities of alkaline-earth compound and alkali-metal compound proportioned to solubilize the alumina values thereof and leaching the sinter thus formed to produce leach liquor containing soluble alumina values, the improvement comprising forming a slurry composed of bauxite, caustic liquor, and the leach liquor in such proportioned amounts as will on digestion form an alumina-rich solution having autoprecipitating characteristics, digesting the slurry under pressure to form an alumina-rich solution, and thereafter precipitating alumina values from the solution.

Magnesite mortar. VEITSCHER MAGNESITWERKE A.-G. Ger. 733,803; abstracted in *Chem. Zentr.*, **1943, II** [7] 659.—A mortar for refractory brick in furnaces operating at high temperatures consists of about 50% magnesite flour (0 to 1.7 mm.), 25% Fe particles (up to about 2 mm.), and 25% fire-clay flour (about 0 to 1.7 mm.). M.HA.

Production of magnesia and calcium carbonate from dolomite. R. D. PIKE (Harbison-Walker Refractories Co.). U. S. 2,373,911, April 17, 1945 (July 18, 1941). 24 claims. (Cl. 23-66). U. S. 2,373,913, April 17, 1945 (Sept. 28, 1943). 15 claims. (Cl. 23-66).

Production of magnesia from dolomite. R. D. PIKE (Harbison-Walker Refractories Co.). U. S. 2,373,912, April 17, 1945 (Dec. 17, 1942). 5 claims. (Cl. 23-201).

Recovery of alumina. R. W. BROWN (Aluminum Co. of America). U. S. 2,375,343, May 8, 1945 (May 18, 1942). 4 claims. (Cl. 23-141).—2. In a cyclic process of extracting silica-free alumina from bauxite, in combination, a digestion step in which bauxite and caustic liquor are pressure digested to form an alumina-rich solution and an insoluble residue including substantial values of caustic and alumina insolubilized by silica during digestion, a precipitation step in which alumina is precipitated from the alumina-rich solution and is separated from the mother liquor, a sintering step in which the insoluble residue is sintered with amounts of alkaline-earth compound and alkali-metal compound proportioned to solubilize caustic and alumina values contained therein, and a leaching step in which the sinter is treated to form a leach liquor containing the soluble values of the sinter, the insoluble portion of the sinter being discarded from the process and the leach liquor being returned to the digestion step and included therein.

Refractory composition and method of making. EUGENE WAINER (Titanium Alloy Mfg. Co.). U. S. 2,373,864, April 17, 1945 (May 11, 1943). 11 claims. (Cl. 106-57).—1. A composition suitable for forming refractory structures comprising essentially finely divided zirconium silicate, 0.002 to 0.5% of a water-dispersible colloid, and 0.002 to 0.5% of a monohydroxyl base, such percentages being based on the weight of the zirconium silicate.

Refractory tamping mass. WALTER KÖNIG AND CHRISTIAN BRUCHHAUSEN. Ger. 734,203; abstracted in *Chem. Zentr.*, **1943, II** [9] 857.—Up to 3% alkali silicotitanate is added to the granulated refractory basic material, if necessary with binders, e.g., waste sulfite lye, dextrin, etc. M.HA.

Whiteware

Development and production of low-lead glazes. JOHN MARQUIS. *Ceram. Ind.*, **44** [3] 76–80 (1945).—To meet the requirements of WPB Conservation Order M-384 on Lead Chemicals, M. suggests low-lead glaze formulas and frits. H.T.

Electrical research in the U.S.S.R. GERALD OSTER. *Jour. Applied Phys.*, **16** [3] 121–24 (1945).—Soviet industry is backed by a great amount of scientific research. Important contributions to electrical research have been made by Soviet scientists. Because the U.S.S.R. is to become a great foreign market for electrical goods, Americans should be familiar with the work and the industrial setup. O. reviews contributions in (1) semiconductors and insulators, including new developments in aluminum oxide glazes, impregnation of glass cloth with cable oils, and dielectric properties of glasses; (2) nonlinear oscillations; (3) electronics and radio; and (4) magnetism. A.P.

Eljer's three and a half decades. ANON. *Ceram. Ind.*, **44** [4] 76–80 (1945).—A description of the improved plant of the Eljer Co., Ford City, Pa., manufacturers of sanitary ware. 6 illustrations. H.T.

Glaze preparation—methods of application. ANON. *Ceram. Ind.*, **44** [3] 70–72 (1945).—Practical suggestions are offered for obtaining the best results in glazing ceramic products. 8 illustrations. H.T.

Leadless glazes for all temperatures. ANON. *Ceram. Ind.*, **44** [3] 74, 76 (1945).—Tested glaze formulas are given, but it is pointed out that they cannot be used without adjusting conditions peculiar to each kiln. H.T.

Placing of ware for glost firing. ANON. *Ceram. Ind.*, **44** [4] 82, 84 (1945).—Practical suggestions for placing bone china, vitrified ware, and glazed ware are given. 5 illustrations. H.T.

Suggestions for leadless glazes. C. G. HARMAN, E. D. LYNCH, AND G. H. JOHNSON. *Ceram. Ind.*, **44** [3] 80–82 (1945).—Glaze formulas are given which have been developed as a part of a cooperative research project of the University of Illinois Engineering Experiment Station and the Barium Reduction Corp., South Charleston, W. Va. H.T.

PATENTS

Composite ceramic and metal structure and method of making. S. H. STUPAKOFF (Stupakoff Ceramic & Mfg. Co.). U. S. 2,373,720, April 17, 1945 (Aug. 2, 1940). 1 claim. (Cl. 174-152).—An insulator device for welded attachment in an opening in a metal wall.

Manufacture of a ceramic mass nonshrinking during firing. HANS PULFRICH AND RICHARD MAGNER. Ger. 734,385; abstracted in *Chem. Zentr.*, **1943, II** [9] 857.—The mass, used especially for the supporting parts of electrical discharge vessels, consists of at least 60% of constituents melting above 2000°C., e.g., MgO, Al_2O_3, ZrO_2, or BeO, and up to 40% of constituents melting below 1000°. They are mixed with the addition of a binder which later evaporates, formed cold, and fired at a temperature slightly above the melting temperature of the constituent with the low melting temperature. M.HA.

Reconditioning spark plugs. A. S. FRY AND L. L. WITHROW (General Motors Corp.). U. S. 2,375,218, May 8, 1945 (May 8, 1943). 9 claims. (Cl. 51-281).

Zirconium oxide containing ceramic material for electrical purposes. L'ÉLECTRO-REFRACTAIRE. Belg. 443,-202; abstracted in *Chem. Zentr.*, **1943, II** [7] 658–59.—Zirconium oxide and aluminum oxide are mixed into the mass in the crystalline phase and in such amounts that when the cast mass cools, the SiO_2 is not transformed, under ordinary conditions, into the crystalline form but remains vitreous. M.HA.

Equipment and Apparatus

Cement that replaces putty for glass instrument windows. ANON. *Machinery* [N. Y.], **50** [7] 217 (1944).—A new synthetic cement has been developed by the Westinghouse Electric & Mfg. Co. that seals glass to the instrument panel far tighter than putty without the laborious handwork of applying and cleaning. A low-temperature oven is used in setting the cement. E.W.R.

Crystal interference phenomena in electron microscope images. R. D. HEIDENREICH AND L. STURKEY. *Jour. Applied Phys.*, **16** [2] 97–105 (1945).—Electron micrographs of MgO, molybdenum oxide smoke, and mica sheets illustrate the occurrence and consequences of electron reflections in crystals. Both the orientation and the thickness of the crystal affect the markings and the intensities of the images. A.P.

Denison hydrostatic test press. ANON. *Machinery* [N. Y.], **50** [8] 186 (1944).—This hydrostatic test press for determining the strength of materials, etc., manufactured by the Denison Engineering Co., may be used to test enamels by alternate applications of pressure to simulate expansion and contraction. E.W.R.

Dispersing clays in a colloid mill. R. BURDICK. *Bull. Amer. Ceram. Soc.*, **24** [5] 160–62 (1945).—3 figures, 1 reference.

Dust extraction and disposal by mechanical methods. ANON. *Ind. Power & Production*, **21** [232] 77–79 (1945).—The following methods of dust separation are described: (1) the cyclonic method, (2) the wet-type settler, (3) static bag filters, and (4) the use of a volute on a vertical axis. G.A.K.

Effects of small amounts of thorium on the life of alloys for heating elements. WERNER HESSENBRUCH AND LORE HORN. *Z. Metallkunde*, **36** [6] 145–46 (1944).—The effect of even very small admixtures of alkaline earths and rare earths on the heat resistance has been previously observed. One of the most effective elements was found to be thorium, and recent investigations showed, in a chromium-nickel alloy with 20% Cr and 80% Ni, a continuous increase in life with increasing thorium content up to about 2% Th. The increase in life amounted to about 5 to 6 times at 1150°C. and 6 times at 1250°, compared with that of the thorium-free alloy. The increase still seems to continue with higher Th contents, but such metal is difficult to work. The tests were made as follows: Small spirals of wire 0.4 mm. in diameter were heated electrically for 2 min. to 1050°C.; the current was then cut off for 2 min. until the wires burned out. Wires with 0.02, 0.1, 1, and 2% Th had a life of 75, 140, 325, and 400 hr., respectively. M.HA.

Electrical charging of electron-diffraction specimens. D. G. BRUBAKER AND M. L. FULLER. *Jour. Applied Phys.*, **16** [3] 128–30 (1945).—In the use of electron diffraction for the identification of materials, difficulty is often encountered because the material acquires a charge. The interplanar spacings are distorted and shifted, particularly for poorly conducting materials such as ZnS, TiO_2, or glass. The effects can be made negligible by irradiation of the specimens by a beam of 450-volt electrons. A.P.

Harper electric furnace for sintering powdered metals. ANON. *Machinery* [N. Y.], **50** [8] 192–94 (1944).—A series of high-temperature electric furnaces for temperatures of 1800° to 2750°F. has been developed by the Harper Electric Furnace Corp. Gastight construction permits the use of various atmospheres. The furnaces are equipped with a preheating tunnel and automatic flame curtains. E.W.R.

Hydraulic extrusion press for experimental work. ANON. *Machinery* [N. Y.], **50** [7] 246 (1944).—This press, primarily designed by the Moslo Machinery Co. for the extrusion of welding rods as an automatic wire feed unit, is combined with the 12-ton press, but the press may be provided with dies for extruding metal powders, carbon, and certain plastics. E.W.R.

Hydraulic press. ANON. *Machinery* [N. Y.], **50** [7] 240 (1944).—A readily portable gap-type press with simplified hydraulic foot control is available from the Reimuller Brothers Co. in 10- and 20-ton capacities. One foot lever applies pressure as rapidly or slowly as desired, and the other releases the work. The operator's hands are free for handling the work. E.W.R.

Infrared principle: what it is, what it does. WILLIAM H. TESMER. *Bull. Amer. Ceram. Soc.*, **24** [5] 162–63 (1945).

Instrumentation for screening industrial vision. R. H. EHRENBURG. *Amer. Jour. Optometry*, **22** [1] 32–36 (1945).—To supply a method for measuring visual performance of industrial employees, the Bausch & Lomb Optical Co., in collaboration with a number of scientists, has produced the Ortho-Rater, a stereoscopic device for visual classification in factories. The Ortho-Rater provides an opportunity for industry to weigh vision as an economic factor. A.P.

Laboratory equipment for the production of infrared rays. MAURICE DÉRIBÉRÉ. *Ann. chim. anal. chim. appl.*, **25**, 34–36 (1943); abstracted in *Chem. Zentr.*, **1943, II** [9] 848.—The equipment for the utilization of the heating action of infrared rays in the range 12,000 to 16,000 a.u., especially for drying, consists mainly of a box containing 250-watt lamps in suitable number and arrangement for a given purpose. The equipment requires 2.5 kw.-hr. for the removal of 530 gm. of water from 3 kg. of silica gel in 2.5 hr. See "Drying. . .," *Ceram. Abs.*, **23** [10] 173 (1944). M.HA.

Measurement of the true temperature of hot gases by means of exhausting thermocouples. A. A. AGROSKIN. *Automat. und Telemech.* [U.S.S.R.], **6** [3] 117–28 (1941); abstracted in *Chem. Zentr.*, **1943, II** [1] 46.—The true temperature of gases above 1200°C. can be measured only by exhausting thermocouples, with three protective screens for a temperature gradient of 150° between gas and wand, with two protective screens for a maximum gradient of 100° to 120°, and with one protective screen only for temperatures up to 1000° to 1200°C. A thermocouple design with three protective screens and its practical application are described. M.HA.

Metrosil. R. W. SILLARS. *Metropolitan Vickers Gaz.*, **20** [345] 304–12 (1944).—A material containing silicon carbide of unusual electrical properties has been produced. It is a dark gray, refractory, porous solid, in mechanical properties rather like porcelain. SiC itself does not obey

Ohm's law, but it is somewhat unstable and unreproducible in its properties, unlike Metrosil, which obeys the law: current = constant × voltage$^{\alpha}$, where α is between 4 and 5. Its resistance also diminishes with rising temperature. A number of uses are described in which generally a Metrosil disk is placed in a circuit which normally applies a fixed potential difference to opposite sides of the disk. Should this voltage rise, e.g., in switching off an inductive coil, the current passed by the disk increases as the 4th or 5th power of the voltage and allows the surge to leak away. It is also useful as a protector of overhead transmission lines against lightning, for d.-c. voltage regulation, the protection of delicate instruments, etc. Guidance is given in selecting the correct size for a particular purpose. L.R.B.

New thermocouple independent of the temperature of the places of comparison. HANS THOMAS. *Z. Metallkunde*, **36** [6] 140–41 (1944).—The new couple consists of two alloys of nickel with different copper content (between 0 and 30% Cu), which are made of electrolytic nickel and electrolytic copper with 1% manganese addition in the vacuum; after being drawn into wire they are annealed in air at 1000°C. Such alloys, between −50 and +20°C., have practically no thermo-potential against each other so that when the place of comparison, i.e., the place of the joint with normal leads, is kept in this temperature range the hot joint temperature is correct. The millivolt-temperature curve of such a thermocouple is practically linear between 300° and 800°C. and deviates only slightly up to 950°C. At 800° the couple gives 12 mv. and at 300°, 2 mv. M.HA.

Nonrecording microphotometer with variable contrast sensitivity. T. B. RYMER AND C. C. BUTLER. *Phil. Mag.*, **35** [242] 202–207 (1944).—Two series of values are usually required for a photograph, e.g., spectrogram or X-ray pattern: (1) a table of the distances of the density maxima from some reference point and (2) the values of these densities. A recording microphotometer gives a curve which has to be measured. The authors describe a microphotometer that is nonrecording but capable of measuring the positions of the broad lines to 1 μ and their intensity. An electrical circuit permits measurement of intensity by a special adjustment so that there is a broad response. To determine the position of a line, the circuit is then readjusted to exaggerate the peak of the line. The principles of the measurement are reviewed. The instrument is discussed in detail as is the electrical circuit. A photocell of the Osram type CMG8 with the maximum current of 10^{-7} amp. is used. The response of the photocell is measured on a sensitive galvanometer or electrometer. The use of the instruments is illustrated with two curves. The time required for determination is not excessive (600 readings in 1 hr.). 4 figures. S.Z.

100-kv. electron microscope. L. MARTON. *Jour. Applied Phys.*, **16** [3] 131–38 (1945).—A transmission-type electron microscope with magnetic lenses has been developed at Stanford University. The instrument has air locks, hydraulically operated stage movement and a stage-tilting device, means for bright- and dark-field illumination and for conversion into a diffraction camera, and improved, stable power-supply circuits. A.P.

Portable tensile testing machine. ANON. *Machinery* [N. Y.], **50** [7] 222 (1944).—This hand-driven machine, manufactured by W. C. Dillon & Co., weighs 132 lb. and has seven interchangeable indicators, giving a range of tensile-strength readings from 0 to 250 lb. up to 0 to 10,000 lb. It can be readily motorized. Tensile, compression, transverse, and shearing tests can be made on the machine. E.W.R.

Processing costs diminish with use of new equipment. ANON. *Ceram. Ind.*, **44** [4] 54–60, 92 (1945).—Types of equipment which are not only labor-saving devices in ceramic manufacturing but also improve the quality of ceramic products are described. 35 illustrations. H.T.

Progress made in the development of the refracting telescope from Galileo to Dollond. HENRY C. KING. *Amer. Jour. Optometry*, **22** [2] 70–84 (1945).—A great many individuals contributed to the design, construction, and use of refracting telescopes from their discovery until achromatic objectives were invented. 72 references. A.P.

Recent trends in the mechanical design of electric arc furnaces. F. W. BROOKE. *Proc. Elec. Furnace Steel Conf., Amer. Inst. Mining Met. Engrs.*, **1**, 14–20 (1943).—Top charge furnaces are used almost exclusively in the foundry field; a four-point roof suspension is used. Top charging has been blamed for bottom trouble, but a properly installed acid or basic bottom is not affected. There is also an increase of production of 24%, and the steel is produced 10% cheaper. W.D.F.

Saving time with infrared in ceramic drying. ANON. *Ceram. Ind.*, **44** [3] 48–50 (1945).—Ceramic products are quickly and safely dried with infrared. The drying period is cut to about one-tenth the original time consumed, and less space is required. Applications for drying ceramic bathtubs, hotel china, grinding wheels, and artware are described. 9 illustrations. H.T.

Shortcomings of modern electric melting furnaces. H. W. MCQUAID. *Proc. Elec. Furnace Steel Conf., Amer. Inst. Mining Met. Engrs.*, **1**, 49–52 (1943).—It is the most expensive method of melting. The cost is tied up with charging and power transmission and should be less expensive. A cold charge should not be put in the furnace. Top charging would be facilitated if no buggy were used and a magnet substituted. Furnace switchboards are too complicated; a kilowatt-hour indicator and power-factor meter should be included on switchboards. The acid roof used on a basic furnace gives trouble too soon; a neutral or basic roof should be used. W.D.F.

Small prism infrared spectrometry. R. B. BARNES, R. S. MCDONALD, V. Z. WILLIAMS, AND R. F. KINNAIRD. *Jour. Applied Phys.*, **16** [2] 77–86 (1945).—Experimental data obtained with an all-purpose infrared spectrometer developed by the Perkin-Elmer Corp. illustrates the performance under several conditions of use in qualitative and quantitative work. A.P.

Trifocals. C. W. MORRIS. *Amer. Jour. Optometry*, **21** [6] 239–41 (1944).—Triple-focus lenses that aid vision at arm's length have not been extensively used because of psychological obstacles. By proper demonstration the advisability of trifocals for people above fifty will become obvious. A.P.

Use of electron diffraction camera to detect insulating films. E. I. ALESSANDRINI. *Jour. Applied Phys.*, **16** [2] 94–96 (1945).—Electron diffraction distinguishes between conducting and insulating films on conducting objects. A.P.

BOOKLET

Index to Cutting Information. ANON. Published by Clipper Manufacturing Co., 4007 Chouteau, St. Louis 10, Mo., 1944. Free.—The booklet explains in detail the use of Clipper masonry saws and covers all phases of masonry cutting. There are many helpful suggestions for quick, economical, "on-the-job" cutting of all sizes and shapes of refractories that will prove invaluable.

PATENTS

Apparatus for appendaging prefabricated pottery ware. W. J. MILLER AND A. J. REEK (Miller Pottery Engineering Co.). U. S. 2,374,556, April 24, 1945 (May 7, 1941; March 9, 1943). 23 claims. (Cl. 25–22).

Apparatus for manufacture of compressed clay bodies. W. H. GLENN. U. S. 2,373,468, April 10, 1945 (Aug. 26, 1942). 1 claim. (Cl. 25-14).—In an extrusion machine of the auger type including a feeding auger and a die head, the combination of a pressure chamber positioned between the feeding auger and die head, the pressure chamber having an open cross-sectional area greater than the feeding area of the auger, means within the pressure chamber to mix the material and compress it together, and reconsolidating means comprising a pair of conical elements with their apices directed toward the feeding auger.

Brinell hardness-testing device. J. O. BISHOP AND L. L. BABCOCK (National Supply Co.). U. S. 2,375,341, May 8, 1945 (Nov. 24, 1942). 6 claims. (Cl. 73-81).

Method and apparatus for appendaging pottery ware. W. J. MILLER (Miller Pottery Engineering Co.). U. S. 2,374,555, April 24, 1945 (May 14, 1943). 36 claims. (Cl. 25-29).

Method and apparatus for feeding clay to molds. W. J. MILLER (Miller Pottery Engineering Co.). U. S. 2,374,553, April 24, 1945 (Dec. 2, 1941). 33 claims. (Cl. 25-1).

Sand packer for pottery. J. A. BOWER (Taylor, Smith & Taylor Co.). U. S. 2,375,191, May 8, 1945 (June 10, 1943). 8 claims. (Cl. 259-2).

Kilns, Furnaces, Fuels, and Combustion

Design of industrial equipment in relation to economy. E. A. C. CHAMBERLAIN. *Gas World [Ind. Gas Supp.]*, **15** [6] 36–42 (1942). **Discussion.** *Ibid.*, [7] 14–16.—The maintenance of industrial gas equipment at maximum efficiency requires a clear conception of efficiency. The expression for boiler efficiency is well understood, but many processes depend on the maintenance of a steady temperature, and little or no heat flows to the goods. Then efficiency can be best assessed from consideration of the heat balance: maintenance rate = heat required to maintain temperature = flue loss + surface loss. The factors to consider in servicing industrial gas furnaces, etc., are (1) optimum gas rate, (2) correct aeration, (3) flue loss, and (4) length of flue. A flue-loss chart is provided for 500-B.t.u. gas. Reducing conditions involve free CO and H_2; 7% potential heat is lost for each 1% CO in the flue gases. Fuel consumption records and their intelligent analysis are urged. L.R.B.

Development of formulas for the calculation of the heating value of coals. KARL NIEMIETZ. *Glückauf*, **79**, 216–18 (1943); abstracted in *Chem. Zentr.*, **1943, II** [7] 695.—The usual calculation of the heating value of the pure coal from the ash residue of the crude coal gives different values depending on the absolute ash content, due to the fact that the ash residue does not agree with the true ash content. N. proposes, therefore, in order to determine the ash factor and the actual heating value, to investigate two specimens of a coal with very different ash contents and to calculate ash factor and actual pure coal heating value from the following formula: crude coal heating value = (100 − ash content × ash factor) × pure coal heating value. A special slide rule for heating values at different ash contents is developed. M.HA.

Driving-nozzle burners for blast-furnace gas, producer gas, and coke-oven gas. GUSTAV NEUMANN. *Arch. Eisenhüttenw.*, **17** [11/12] 237–46 (1944).—Driving-nozzle gas burners are burners in which one of the two gases is the driving agent for the other by suction. A case is investigated in which the fuel gas is the driving agent and air is suctioned, only cold (not preheated) air being considered. Burners for cold air have the advantage of not requiring air pipes or blowers. The theory for calculating the necessary driving force and control arrangements is developed, and nomograms for the practical dimensioning of the burners for the three types of gases are derived. M.HA.

Firing of common and blue brick: XXI, Influence of the firing conditions on the properties. O. KRAUSE AND H. S. CHEN. *Tonind.-Ztg.*, **66**, 343–48 (1942); abstracted in *Trans. Brit. Ceram. Soc.*, **43** [2] 23A (1944).—The resistance to pressure, resistance to cracking, modulus of elasticity, thermal-expansion behavior, and the firing color were investigated. For Parts **XXII** and **XX** see *Ceram. Abs.*, **22** [10] 180 (1943); for Part **XIX** see *ibid.*, **24** [4] 78 (1945); for Part **XVIII** see *ibid.*, **23** [5] 93 (1944).

Further studies of the structure and stability of burner flames. G. VON ELBE AND M. MENTSER. *Jour. Chem. Phys.*, **13** [2] 89–100 (1945); see "Stability. . . ," *Ceram. Abs.*, **22** [5] 81 (1943). G.A.K.

Gas producers and their operation. F. T. PERRINS. *Claycraft*, **18** [6] 238–45 (1945).—P. describes gas producers under the following headings: (1) economical, (2) fuels used, (3) reactions taking place, (4) air and steam, (5) types of producers, (6) suction producers, (7) pressure producers, (8) operation of gas producer, (9) feeding, (10) cleaning, and (11) economics of producer gas. Illustrated. G.A.K.

Method of establishing firing schedule. ANON. *Ceram. Ind.*, **43** [5] 78–84 (1944).—A practical guide for firing ceramic ware is presented. The various temperature zones in periodic and continuous kilns are discussed, and the chemical and mechanical reactions in a body during the firing cycle are explained. These reactions set the heating schedule of a kiln. 11 illustrations. H.T.

Nonluminous flame gases. W. T. DAVID, J. MANN, AND F. R. MOBBS. *Nature*, **155** [3931] 273 (1945).—After flame has traveled through a homogeneous inflammable mixture, the gases left behind rapidly reach a state of equilibrium. Typical temperature measurements made with combustible gas-air mixtures during the pre-pressure period in large closed-vessel explosions by means of wires of 0.0005-in. diameter are given in the following table:

	Temperatures (°C.)	
	28% carbon monoxide	9% methane
Calculated	2110	1860
Platinum	1790	1680
Quartz	1440	1360

In the case of inflammable mixtures with a large excess of combustible gas, the abnormal dissociation seems to be suppressed in the flame gases, for plain and quartz-covered wires yield the same temperatures. When such mixtures undergo combustion in a tube, the flame gases, although luminous after the early stages of flame front travel, suddenly became nonluminous after further travel. A series of temperature measurements was made with such mixtures in a closed iron tube 12 ft. long and 4 in. in inside diameter. For a mixture of 90% carbon monoxide and 10% oxygen when the flame gases are luminous the wire temperatures are more than 200°C. below the calculated temperature, but after 15 in. (presumably nonluminous) they are nearly equal to the calculated temperature. It would appear that nonluminous flame gases, unlike ordinary flame gases, are just hot normal gases. G.A.K.

PATENTS

Industrial kiln and oven. B. J. MOORE AND B. C. MOORE. U. S. 2,375,317, May 8, 1945 (April 18, 1944; in Great Britain Feb. 5, 1943). 9 claims. (Cl. 13–22).—1. An industrial kiln provided with electric resistance heating elements formed of powdered conducting material contained in refractory housings, the refractory housings comprising inner and outer refractory members spaced apart to provide a cavity therebetween and refractory powder filling the cavity.

Geology

Beginning of the ceramic industry in Colombia. EFRÉN DÍAZ. *Rev. Colombiana Quim.*, **1** [1] 36–38 (1944–45).—Studies indicate that great quantities of ceramic raw materials exist in Colombia, on which petrographic, chemical, and physical studies are now in progress. The demand for information on refractories proves the necessity for these studies. Even though raw materials are plentiful, manufacturing processes are not sufficiently developed to produce cooking ware or sanitary ware for modern homes. D. suggests that a state organization be established to prepare materials for small plants which would fabricate and fire them into the finished form. He cites

the example of such organizations in Europe and states that they would solve the technical and economic problems of the small industry with little money in Colombia. If such arrangement is perfected at this time, it will prevent the ceramic industry from being monopolized by large organizations or foreigners later. L.P.

Diatomaceous earth, Wainu, Akaroa, New Zealand. R. W. WILLETT. *New Zealand Jour. Sci. Tech.*, **25B** [2] 90 (1943); abstracted in *Trans. Brit. Ceram. Soc.*, **43** [11] 151A (1944).—This deposit occurs at the head of a small stream that rises east of Carew Peak, and access to it is by a metalled road which passes within half a mile. Samples have been taken, and 6 ft. of diatomaceous earth, without reaching the bottom, have been exposed under 5000 sq. yd. The area is worthy of full examination to determine the extent and thickness of the deposit.

Densimeter method of mechanical analysis. MARIO R. CODONI. *Soil Sci.*, **56,** 423–31 (1943).—Methods of computation of the maximum diameters of particles in suspension, in the densimeter method of soil mechanical analysis, are compared on the hypothesis of Casagrande and that of the U. S. Bureau of Public Roads. The latter hypothesis gives, for the fractions smaller than 20 μ, values that are somewhat higher than those obtained with the former hypothesis. Results are also given of a comparison between mechanical analyses made with Bouyoucos' hydrometer for weights and Casagrande's densimeter, using in each case the corresponding formula for the computation of the maximum diameters. The comparison is made only for the fraction smaller than 2 μ. The differences found are not consistent and are not large. 6 references, 1 figure. E.W.R.

Effect of concentration on the free and titratable acids of hydrogen bentonites sols. J. N. MUKHERJEE, R. P. MITRA, AND S. S. MANDAL. *Nature*, **155** [3933] 329–30 (1945).—Some effects of the concentration of the colloid on the H^+-ion concentration of the sol as well as the amount of the acid calculated at the inflection point of the potentiometric titration curve with sodium hydroxide have been observed in the case of a hydrogen bentonite. G.A.K.

High-alumina clays of Pennsylvania. RICHARD M. FOOSE. *Econ. Geol.*, **39** [8] 557–77 (1944).—More than 5 million tons of high-alumina clays occur in the Curwensville and Morgan Run districts of Clearfield County, Pa. These clays, associated chiefly with the Mercer member of the Pottsville (Pa.) group, are flint and diaspore-bearing flint clays. All gradations between flint clay and nearly pure diaspore occur at Mercer horizon. The stratigraphic position of the nodule clays is now shown to be only at the base of the Mercer. The clays occur in lenticular masses having wide ranges of thickness. From the field relations and the petrographic textures and structures it is shown that the diaspore clays were formed partly by the leaching of silica from flint clay and partly by the addition of alumina to the flint clay. B.C.R.

Importance of diatoms in industry and national economy. KARL MÖLDER. *Suomen Kemistilehti*, **16,** 38–40 (1943); abstracted in *Chem. Zentr.*, **1943, II** [4] 357.—Kieselguhr is found in Finland in thin layers at the bottom of fens and lakes; it is formed especially in the oligotropic lakes of the northern part of the country. It is an important raw material for the manufacture of water glass, glazes, enamels, inorganic colors (ultramarine, ultraviolet), and grinding and polishing agents. It is also used for making cement, mortar, light brick, floors, and pavements and as a filtering agent in the food industries for the sterilization of water, as a catalyzer, as a filler in the paper, rubber, and paint industries, and prominently in heat-insulating materials. M.HA.

Liberation of H^+, Al^{+++}, and Fe^{+++} ions from hydrogen clays by neutral salts. J. N. MUKHERJEE AND B. CHATTERJEE. *Nature*, **155** [3931] 268–69 (1945).—The amounts of H^+, Al^{+++}, and Fe^{+++} displaced from hydrogen clays Satara-F and Jorhat-F, prepared, respectively, from a black cotton and an acid soil, decreased to almost negligible values on continued leaching with a normal solution of barium chloride. The above cations, however, were liberated, as often the barium clay thus obtained was rendered desaturated by treatment with 0.02 *N* hydrochloric acid and then leached with a solution of *N* barium chloride. In the case of Satara-F, which contains montmorillonite, the total amount of acid in its "leachates" decreased with successive desaturations. With Jorhat-F, containing mainly kaolinite and a very small quantity of montmorillonite, it tended to a constant value. Very little Fe^{+++} ion was displaced by *N* barium chloride from the two hydrogen clays. The sum of the displaced Al^{+++} and Fe^{+++} ions decreased with progressive desaturations, tending to a constant value with both hydrogen clays. X-ray diagrams gave no lines characteristic of most montmorillonite in hydrogen clays at the end of the above cycle of operations. A relation between the mineralogical composition of the clay and the quantities of displaced Al^{+++} and Fe^{+++} ions was indicated by the above results. Further work with pure clay minerals is in progress. G.A.K.

Mattson's papers on "The laws of soil colloidal behavior"—review and comments. W. P. KELLEY. *Soil Sci.*, **56,** 443–56 (1943).—The extensive use in these papers (*Ceram. Abs.*, **22** [5] 84 (1943)) of purely hypothetical assumptions with lengthy discussions based thereon, even though theoretically sound, and the intricate commingling of such discussions with those based on results obtained with actual soil colloids add difficulty to a clear understanding of the papers. The most difficult and most interesting parts are those devoted to theory; they are not discussed in detail in this review. The use of the word "laws" in the title of these papers is misleading. It cannot be said that any principle or set of principles has been sufficiently developed to justify a claim that definite laws have been established. Nevertheless, K. feels that these papers will well repay careful study by students of soil science and of colloidal phenomena in general. 16 references. E.W.R.

Methods for the determination of the fineness of cement and other finely ground powders. PER HÅKANSON. *Betong*, **1943,** 33–40; abstracted in *Chem. Zentr.*, **1943, II** [7] 658.—A critical survey of various methods leads to the conclusion that the method of Lea and Nurse is the best for the determination of the specific surface, while the Andreasen method should be used for determining grain distribution and fineness of the individual components. M.HA.

Organization outlined for Bureau of Mines. ANON. *Pit and Quarry*, **37** [10] 88 (1945).—The Bureau of Mines has organized its field divisions of the mining and metallurgical branches of the Bureau. The metallurgical branch of each field division will be responsible for research on the conservation, preparation, and utilization of metals and nonmetals. The mining branch of each field division will look after engineering examinations, exploration projects, and improvements of operations of existing mines. The country (including Alaska) has been divided into 10 sections, each to have a field division. M.R.

Photomicrography by combined transmitted and reflected light. ERNEST E. FAIRBANKS. *Econ. Geol.*, **39** [8] 590–92 (1944).—Minerals containing both transparent and opaque areas are difficult to show by conventional photographic methods. By combining both transmitted and reflected light to illuminate the polished thin section, a satisfactory photograph of oölitic iron ore minerals can be made. B.C.R.

Refractory clays in the glass industry. ZDENĚK SCHAEFER. *Sklářské Rozhledy*, **20,** 24–28 (1943); abstracted in *Chem. Zentr.*, **1943, II** [1] 60.—The properties of the clays required in the production of refractory materials and their composition with regard to the harmful constituents Fe, pyrite, basic oxides, sulfates, and sulfides are discussed, and the importance of grain size and formability is emphasized. Directions are given for the selection of refractory brick for tanks and glass pots. M.HA.

Rutile and ilmenite being obtained from Florida. ANON. *Link-Belt News*, **12** [4] 1–2 (1945).—Rutile and ilmenite, formerly obtained almost exclusively from Australia, are being reclaimed in satisfactory quantities from a deposit about 8 miles from Jacksonville, Fla. Pro-

duction was started in June, 1942, and the capacity of the plant was doubled in April, 1944. The machinery for handling the materials and concentrating is described. 6 photographs. See "Heavy . . .," *Ceram. Abs.*, **24** [5] 97 (1945). C.S.P.

Short-wave ultraviolet prospecting set for fluorescent minerals. P. RABONE. *Bull. Inst. Mining Met.*, No. 471, pp. 1–11 (1945).—At the request of the Ministry of Supply a portable apparatus was designed and made by the Research Staff of the General Electric Co., Ltd., for the detection of scheelite in development and mining operations, and it was used with success at the Carrock Fell mine, Cumberland. An outfit of similar design has since been put on the market as a standard article. It is a self-contained apparatus for generating ultraviolet radiation of the wave length required to excite fluorescence in scheelite. The only one manufactured in Great Britain, it consists of a cold-cathode low-pressure mercury-vapor discharge tube in a special holder; a converter unit for providing a.c. of the required voltage from a d.-c. supply; and a 12-volt accumulator as the source of d.c. The discharge tube, which is of quartz, is connected with the converter unit by means of a 15-ft. length of high-tension cable, and the converter unit is connected with the accumulator by low-tension cable. E.R.V.

Some firing and fired properties of New York State diopside, wollastonite, and a tremolitic material. C. R. AMBERG. *Jour. Amer. Ceram. Soc.*, **28** [5] 141–43 (1945).—4 figures.

SEPARATE PUBLICATIONS

Geology and Mineral Resources of the Burkes Garden Quadrangle, Virginia. B. N. COOPER. *Virginia Geol. Survey Bull.*, No. 60, 299 pp. (1945).—This report is a comprehensive discussion of the physical characteristics of the sedimentary rocks of this part of southwestern Virginia, their structure, and their contained mineral resources. The physiography and geologic history are concisely discussed. The rocks are mainly limestones, dolomites, and shales, with some sandstones, ranging from middle Cambrian to lower Pennsylvanian. The mineral resources include limestone, dolomite, coal, clay, sand, stone, barite, iron, manganese, lead, and zinc. Chemical analyses of 73 sampled units, mainly limestone, are given in a table. A.C.B.

Geophysical Survey of Arkansas Bauxite Region, Pulaski, Saline, Lonoke, White, Grant, Hot Spring, and Clark Counties. J. R. THOENEN, M. C. MALAMPHY, AND J. L. VALLELY. *U. S. Bur. Mines Rept. Investigations*, **3791,** 49 pp. (1945). Free.—Preceding a drilling program in which the Bureau marked out several million tons of bauxite and clays, the geophysical survey described in this publication covered about 1400 square miles of the central Arkansas bauxite belt and enabled engineers to eliminate many areas where there was little likelihood of finding bauxite. Methods and results of the geophysical survey, which began a few months after Pearl Harbor, are described in detail. 20 illustrations. R.A.H.

Manganese Investigations: 19, Studies in the Electrodeposition of Manganese. F. W. WOODMAN AND J. H. JACOBS. *U. S. Bur. Mines Rept. Investigations*, **3681,** 26 pp. (1944). Free.—A description is given of the operation of the Bureau's electrolytic manganese pilot plant at Boulder City, Nev., particularly the electrolytic cells and the composition of the anodes and cathodes. 4 illustrations. See *Ceram. Abs.*, **22** [8] 145 (1943). R.A.H.

Microseismic Method of Predicting Rock Failure in Underground Mining: I, General Method. LEONARD OBERT AND WILBUR DUVAL. *U. S. Bur. Mines Rept. Investigations*, **3797,** 7 pp. (1945). Free.—The authors describe the general microseismic method, give the facts upon which it is based, discuss testing procedures, and show how data obtained are recorded and analyzed. R.A.H.

Paligorskite, a Possible Asbestos Substitute. ROBERT B. FISHER, ROBERT L. THORNE, AND CORBIN VAN COTT. *U. S. Bur. Mines Information Circ.*, **7313,** 5 pp. (1945). Free.—To acquaint manufacturers of asbestos products with the industrial possibilities of paligorskite, a type of asbestos usually called mountain leather, the Bureau describes the examination of an Alaskan deposit of this unusual mineral, reports on laboratory tests of samples, and suggests that paligorskite may be used in soundproofing, insulating, and shock-absorbing and other products. The work was done in cooperation with the School of Mines and Metallurgy of the University of Missouri. R.A.H.

Study of Firing Failure in Massive Talc. HOWARD F. CARL. *U. S. Bur. Mines Rept. Investigations*, **3800,** 9 pp. (1945). Free.—Information on the firing or heating properties of high- and low-grade block talc is given to assist the talc industry in recovering larger percentages of crack-free fired products from the limited supply of raw materials. Talc samples from 3 states and 2 foreign countries were studied for composition, texture, grain size, and structure, and their behavior under firing conditions in an electric furnace was observed. 4 illustrations. R.A.H.

PATENTS

Treatment of clays. A. D. GARRISON (Texaco Development Corp.). U. S. 2,375,641, May 8, 1945 (Feb. 13, 1943). 11 claims. (Cl. 252-300).—1. The process of treating a natural clay to improve the surface characteristics thereof which comprises preparing a mass of the clay and water and comprising an alkaline dispersing agent, extruding the mass under a high fluid friction, and then removing replaceable metals from the extruded product.

Chemistry and Physics

Accuracies of different types of examination questions. A. G. CONRAD AND R. J. W. KOOPMAN. *Jour. Eng. Education*, **30** [10] 860–69 (1940).—There is too much personal opinion and guesswork used in deciding what type of question to use in examinations in any given course. More specific data are needed so that statistical analyses can be made. There are four general types of questions: objective, subjective, essay, and project. The authors have made a statistical analysis of the results of an electrical-engineering examination of the objective type and show the method of calculating the correlation coefficients for the various types of questions used and hence the validity of each type of question. E.W.R.

Basic physics as a part of mathematics. ALAN HAZELTINE. *Jour. Eng. Education*, **30** [8] 699–703 (1940).—H. describes a freshman course in engineering problems, in which the direct application of the various basic laws of physics is studied from the start. The primary reason for the course is to keep together the physical and mathematical aspects of engineering problems, which is desirable for many reasons. Their separation, as is customary, is artificial and unnecessary and is detrimental to the student. E.W.R.

Content of the mechanical-engineering curriculum. RALPH E. FLANDERS. *Jour. Eng. Education*, **30** [9] 803–805 (1940).—F. divides the functions of engineers into seven groups: (1) maintenance, (2) operating and processing, (3) production methods, (4) executive functions, (5) designing, (6) consulting, and (7) research. He feels that there should be three types of engineering education available: (*a*) for the technicians (the first three functions), (*b*) for executives, and (*c*) for engineers in the strictest sense (the last three functions). He also stresses the importance of summer jobs for engineers in their field and of training in good technical writing. E.W.R.

Correlation of laboratory work in strength of materials with the classroom course. G. P. BOOMSLITER. *Jour. Eng. Education*, **30** [7] 583–94 (1940).—B. feels that the laboratory work in a strength of materials course is an important aid in understanding the fundamental principles,

and thus a careful correlation should be made between the laboratory and the classroom. There should be little lag between the discussion of the theory in the classroom and the application of this theory in the laboratory. More attention should be paid to the aims of the laboratory work to illustrate in a concrete way some of the important derived facts that are developed in theory, to show their degree of accuracy, and to point out their limitations. Additional aims include training in observation, training in compiling and analyzing data, the introduction to specifications, and the laboratory methods of checking them and selecting materials. E.W.R.

Deformation planes and crystallographic directions in quartz. J. L. ANDERSON. *Bull. Geol. Soc. Amer.*, **56** [4] 409–30 (1945).—Critical study of fractures in vein quartz in a quartzite reveals that rupturing occurred along crystallographic planes. The breaks are single or composite. Quartz grains broke into elongated slivers bounded by crystal planes. The "results indicate that quartz is a delicate indicator of stress." A.C.B.

Evaluating the ability of students to do the work of upper classes in engineering colleges. WILLIAM H. FORMHALS AND BRADLEY STOUGHTON. *Jour. Eng. Education*, **30** [8] 668–76 (1940).—By means of a double category of scholastic grades and comprehensive examination grades, men can be eliminated from the junior class who, for their own benefit and the benefit of the college, should not be permitted to go on, but who could not be eliminated justly on the basis of scholastic grades alone. 1 illustration. E.W.R.

Experiment in teaching methods for the course in materials laboratory. CHESLEY J. POSEY. *Jour. Eng. Education*, **30** [8] 686–89 (1940).—P. has introduced, at the end of the course, an experiment by each laboratory squad of ten men. The subject, method of approach, procedure of testing, and final report form are all chosen by the students with little or no help from the professor. P. feels that this is valuable experience for an engineer and fulfills several of the objectives of laboratory work that a routine course does not fill. E.W.R.

Instructional methods in engineering—a bibliography. WILLIAM C. WHITE. *Jour. Eng. Education*, **30** [9] 761–88 (1940).—This bibliography (with one-paragraph summaries of each article) of 116 references on instructional methods was compiled from publications of the Society for the Promotion of Engineering Education for the period from 1926–27 to 1938–39. E.W.R.

Mathematics—a language. EVAN THOMAS. *Jour. Eng. Education*, **30** [10] 842–47 (1940).—T. stresses the importance of teaching mathematics as a symbolic expression of facts. It should be started by making simple verbal statements into equations and should be carried on through higher mathematics as a method of constantly keeping in mind "what it is all about." E.W.R.

Measurement of potentials at the interface between vitreous silica and solutions of potassium chloride by the streaming potential method. G. JONES AND L. A. WOOD. *Jour. Chem. Phys.*, **13** [3] 106–20 (1945).—Improvements in the technique for the determination of the electrical potential at the interface between a nonconducting solid and an aqueous solution of an electrolyte are described in detail. Zeta-potentials of vitreous silica capillaries in contact with three dilute solutions of potassium chloride (10^{-3}, 10^{-4}, 10^{-5} *N*) have been determined. These data have been used for the interpretation of the surface tension data of Jones and Ray by using Langmuir's theory for the thickness of wetting films as a function of the zeta-potential. G.A.K.

Need for research in the building industry. JOHN ELY BURCHARD. *Jour. Eng. Education*, **30** [7] 601–605 (1940).—Studies along the following lines seem to have immediate application to the building industry: (1) social-political economy, (2) building materials, (3) building productivity, (4) amenities, and (5) integration of materials and amenities and methods. Further research in these subjects is seriously needed by the building industry. E.W.R.

Physics in 1944. T. H. OSGOOD. *Jour. Applied Phys.*, **16** [2] 61–76 (1945).—This annual review of progress in physics (see *Ceram. Abs.*, **23** [10] 176 (1944)) discusses (1) war and research, (2) X rays, (3) cosmic rays, (4) nuclear disintegrations, (5) atmospheric showers, (6) theory of counters, (7) artificial disintegration, (8) magnetic lens spectrometer, (9) Newton's rings, and (10) postwar organization of physicists. A.P.

Replacement problem formula. E. H. FREEMAN. *Jour. Eng. Education*, **30** [7] 606–607 (1940).—F. gives an equation (and its algebraic proof) for finding the total annual cost of an old machine and of a new machine and hence the economic feasibility of purchase of the new machine. He has simplified the equations so that the machine's original cost, years of previous service, depreciation rate, and "unamortized value" or sunk cost are quantities that are not needed in the calculation. The equation for the total annual cost of the old machine (not actual cost, however) is

$$Y'_o = (S'_o - S_o)d_o + S'_o i + O_o,$$

and that for the new machine is

$$Y'_n = (C - S_n)d_n + C_i + O_n.$$

S'_o = present salvage value of the old machine.
S_o = salvage value of the old machine at the end of its remaining life.
d_o = depreciation rate for the remaining life of the old machine, preferably on a sinking fund basis.
i = interest rate.
O_o = all yearly expenses for the old machine except depreciation and interest.
C = first cost of the new machine.
S_n = salvage value of the new machine at the end of its life.
d_n = depreciation rate for the life of the new machine.
O_n = all yearly expenses for the new machine except depreciation and interest.

Neither of these costs, Y'_o or Y'_n, is the actual cost under the conditions assumed. Both actual costs for the period considered have been reduced by the same amount. The difference in cost is not changed thereby, but the calculations and other work are simplified. E.W.R.

Silicic acid gels: XII, Time of set of acidic and basic mixtures containing phosphoric acid. CHARLES B. HURD AND ANGELO J. MAROTTA. *Jour. Amer. Chem. Soc.*, **62**, 2767–70 (1940); *Chem. Abs.*, **34**, 7699 (1940).—Results are reported of the study of the setting of silicic acid gels containing H_3PO_4. Data are for time of set vs. pH, time of set vs. temperature variation of pH with time, energy of activation of silicic acid gels containing H_3PO_4, and time of set for silicic acid gels containing the following acids at 24.9°: HCl, HNO_3, H_2SO_4, and H_3PO_4. In acidic mixtures the pH was found to increase until the gel had set. This agreed with the data already reported for mixtures containing HCl, HNO_3, or H_2SO_4. Curves for the log of time of set against pH show linear portions rising from a flat minimum near the neutral point. The first data available for calculation of the energy of activation in the basic range (pH 9.0 to 10.5) give a value of about 24,700 cal. The data support the polysilicic acid fibrillar or the condensation theory for the formation of silicic acid gels and offer evidence against the acceptance of the coagulation theory. The data suggest that monosilicic acid is a much stronger acid than commonly believed. For Part **XIII** see *Ceram. Abs.*, **22** [1] 23 (1943).

Simplified determination of the alkalis in silicates. J. J. S. CORNES. *Analyst*, **69** [821] 237–41 (1944).—Decompose a 1-gm. sample with 4 ml. of 1:1 H_2SO_4 and 8 to 10 ml. of HF. Evaporate to dryness, cool, add 2 ml. of 1:1 H_2SO_4, and fume again to dryness. Heat carefully to 900°C. to decompose aluminum and titanium sulfates. Leach with water, transferring the residue to paper. For the second extraction, ignite the paper, fume again with 4 ml. of 1:1 H_2SO_4, and leach with hot water. Dilute to 100 ml. and, using aliquot portions, determine sodium as uranyl acetate and potassium as cobaltinitrite. B.C.R.

Specialized curricula in mineral dressing. P. C. EMRATH. *Jour. Eng. Education*, **30** [8] 704–707 (1940).—The technical schools are not meeting their responsibility in offering a curriculum in mineral dressing. Mineral dressing is in every sense a form of engineering practice, and the technical schools should train more men for this field. E.W.R.

Spectrochemical determination of iron in glass sands. L. H. AHRENS. *Jour. S. African Chem. Inst.*, **27** [2] 28–38 (1944).—A method is described for estimating iron in glass sands, using silicon as an internal standard. Although the use of an internal standard for the analysis of powders is sometimes regarded as offering no advantages, in this case silicon behaved efficiently as an internal standard, with the result that a very satisfactory accuracy was obtained, the probable error being 4.9% of the total iron content. Interference by potassium was investigated, and this element produced high results when present in quantity. With the aid of graphs, this effect is shown to be attributable to the pronounced depressant effect that potassium has on the spectrum of silicon. 8 references, 8 illustrations.

Study of the activities of graduates of the School of Mines and Metallurgy, University of Minnesota. E. H. COMSTOCK. *Jour. Eng. Education*, **30** [8] 708–13 (1940).—From a study of the progress of graduates and of the requirements set forth in requests for recommendations of graduates and from talks with company representatives interviewing prospective graduates, C. concludes that the ability to carry on a "craft" job is a requisite in securing a first position. For this reason, actual experience should be obtained in school in the various "crafts," such as surveying, assaying, sampling, etc. E.W.R.

PATENTS

Manufacture of alkali-metal silicates. E. G. NUTTING, JR. (Wyandotte Chemicals Corp.). U. S. 2,374,035, April 17, 1945 (April 22, 1943). 11 claims. (Cl. 23-110).—1. The method of making alkali-metal silicates consisting in the steps of pressing together a mixture of solid caustic alkali and silica until the individual particles are compacted tightly together and form a self-sustaining mass and then subjecting the pressed mixture to a temperature above 600°C. for a period of a few minutes of time whereby the caustic alkali and silica rapidly react.

Preparing barium aluminate. F. J. WILLIAMS (National Lead Co.). U. S. 2,375,715, May 8, 1945 (Oct. 24, 1941). 4 claims. (Cl. 23-52).—1. Method of preparing barium aluminate which comprises heating a mixture consisting essentially of a barium sulfate material and an aluminum oxide material and containing no added carbonaceous material other than impurities at temperatures between about 1400°C. and about 1550°C., maintaining oxidizing conditions throughout the mixture during the heating until the barium sulfate content thereof is decreased to a minor portion of the mixture, and then changing the conditions from oxidizing to reducing and continuing the heating within the temperature range until the bearing sulfate is substantially completely eliminated.

Purification of strontium. P. P. ALEXANDER (Metal Hydrides, Inc.). U. S. 2,375,201, May 8, 1945 (March 5, 1943; April 26, 1944). 20 claims. (Cl. 75-67).

General

Bucket elevators. J. W. LEECH AND E. OLDFIELD. *Mech. Handling*, **31** [10] 462–68; [11] 523–28; [12] 597–605 (1944); **32** [1] 30–35; [2] 97–99 (1945).—Bucket elevators are discussed exhaustively. Consideration is given mainly to design, and much design data on continuous and pitched bucket applications have thus been made available. Each of these two groups is further divided into high and low speed and inclined and vertical types. Three types of chain and rubber and canvas belting are carefully considered as are various types of buckets, boot wheels, elevator structure, elevator heads, control gates, hoppers, drives, and several examples of chain and belt elevator installations. 21 illustrations. M.R.

Combustion control equipment for small power plants. ANON. *Machinery* [N. Y.], **50** [7] 238 (1944).—This equipment, manufactured by Leeds & Northrup Co., continuously proportions the fuel (coal, oil, or gas) and air to meet the steam demands and at the same time controls the furnace pressure. Push-button switching permits ready changeover to manual control of any or all units. E.W.R.

Dust collector. ANON. *Machinery* [N. Y.], **50** [7] 220 (1944).—Units are available in 1000 to 3000 cu. ft. per min. capacities. They consist of two major sections: (1) a preliminary centrifugal section where the bulk of the entrained material is separated from the air and (2) a secondary cloth-screen section with provision for cleaning. They are manufactured by the Pangborn Corp. E.W.R.

Fiber rope. ANON. *Natl. Safety News*, **52** [3] 120, 125 (1945).—To obtain the maximum safe service from available rope, it is necessary to know the qualities and limitations of each material. A description is given of manila, sisal, Mexican sisalana, and American hemp, with suggestions on the proper care and use of fiber ropes. M.R.

Forces behind an industrial vision program. RICHARD FEINBERG. *Amer. Jour. Optometry*, **22** [2] 51–56 (1945).—A complete industrial vision program is a combination of vision placement, correction, and protection. The refractionist must learn to work in collaboration with management, the industrial medical department, safety director, psychologist, labor, and manufacturers of visual materials and devices. A.P.

Gasoline piping and storage. H. D. UNWIN. *Heating & Ventilating*, **42** [1] 51–56; [2] 88–91; [3] 86–88, 119; [4] 96–98 (1945).—U. discusses the problems connected with the storage and handling of gasoline for a fairly large group of vehicles or other pieces of gasoline-driven equipment. Storage facilities, distribution systems (both pump and hydraulic), piping design with basic data on fluid flow, system safeguards, valves and controls, and Underwriters standards are some of the phases touched upon. 8 illustrations. M.R.

Hoisting chains. ANON. *Natl. Safety News*, **52** [3] 117 (1945).—Eight types of chains are discussed, and their salient points are emphasized. Rings and hooks, storage of chains, and safe loads are also covered. 1 diagram. See *Ceram. Abs.*, **23** [10] 179 (1944). M.R.

How to chromium-plate for greater tool life. R. W. BENNET AND C. HASTIE. *Machinery* [N. Y.], **50** [7] 190–94 (1944).—The procedure followed at the Springfield, Mass., plant of the Westinghouse Electric & Mfg. Co. is described. It increases tool life with consistent and successful results. 4 illustrations. E.W.R.

Increasing life of high-speed steel tools by nitriding. ANON. *Machinery* [N. Y.], **50** [7] 170–75 (1944).—A description is given of current practice in applying two nitriding processes to high-speed steel tool case hardening, (1) the Holden Hy-Speed case treatment outlined by the General Committee on Metallurgy of the General Electric Co., and (2) the Maxi process developed by the Greenfield Tap and Die Corp. 3 illustrations. E.W.R.

Industrial injuries in the United States in 1941. M. D. KOSSORIS. *Monthly Labor Rev.*, **55** [3] 501–26 (1944); abridged in *Amer. Jour. Optometry*, **22** [1] 3–13 (1945). A.P.

Intermittent rotary-motion mechanism. CHARLES F. SMITH. *Machinery* [N. Y.], **50** [7] 203–204 (1944).—S. describes a device for transmitting intermittent rotating motion in a counterclockwise direction from a shaft rotating clockwise at constant speed. Illustrated. E.W.R.

J. Spotts McDowell. ANON. *Bull. Amer. Ceram. Soc.*, **24** [5] 157–59 (1945).—1 photo.

Mechanization in a magnesium sand foundry. ANON. *Mech. Handling*, **32** [1] 2–9; [2] 60–66 (1945).—A modern

British magnesium sand foundry is described, which embodies a number of new mechanical aids to production and an adequate ventilation system. The latter, in combination with the mechanized equipment, enables a greatly improved standard of working conditions to be achieved. The mechanical equipment discussed includes molding machinery, lifting gear, furnaces, conveyers, and core driers. 26 illustrations. M.R.

Modern industrial steam-raising plant. F. CRABTREE. *Fuel Econ. Rev.*, **23,** 19–27 (1944).—C. reviews practice at a large textile factory where there is a big demand for steam at relatively low pressure. The efficiency of this steam raising has an important influence on costs. Illustrated. E.R.V.

Monolithic construction of boiler and industrial furnaces. S. L. DAVIS. *Natl. Engr.*, **49** [3] 168–69 (1945).—D. primarily intends to give those faced with the responsibility of selecting the proper kind of furnace materials a general idea of the qualifications of monolithic linings for furnace construction. He asks, "Is a monolithically constructed furnace superior to one built of firebrick?" and then presents some pertinent facts regarding the advantages of this type of furnace construction. The factors that influence the life of refractory walls inside the furnace are discussed under (1) high temperatures and temperature changes, (2) combustion conditions and chemical reactions, and (3) flame impingement and flame erosion. 1 photograph. M.R.

Multiple-tool steel turning with carbide-tipped cutters. RALPH GRANZOW. *Machinery* [N. Y.], **50** [7] 186–89 (1944).—G. gives detailed information concerning the proper nose radii, rake, and chip-breaker width on tools for turning steel. 3 illustrations. E.W.R.

Nondefendants in Toledo glass trial form new container organization. ANON. *Amer. Glass Rev.*, **64** [28] 11 (1945).—The Glass Container Manufacturers Institute has been incorporated at Columbus, Ohio, by glass companies that were not defendants in the antitrust case. Incorporators were officials of Gayner Glass Works, Carr-Lowrey Glass Co., Foster-Forbes Glass Co., Fairmount Glass Co., Brockway Glass Co., and Knox Glass Associates. The Supreme Court's decision had left the glass container industry without any trade association with which to compete with the tin, paper, and plastic container industries. Nondefendant companies joined with the closure manufacturers and raw-material suppliers to maintain research, development, and statistical services in the public interest. A.P.

Patents and invention in Russia. P. J. GAYLOR. *Jour. Patent Office Soc.* [U. S.], Aug., 1944; reprinted in part in *Chem. Trade Jour.*, **115** [3003] 599–600 (1944).—The granting of patents in the U.S.S.R. is discouraged and is only apparently preserved in the interest of foreigners. On the other hand, the issue of "inventor's certificates" is stimulated. In the latter case the right to exploit the discovery rests with the state. Useful patents are bought by the state after negotiation, and, in extreme cases, the inventor may be dispossessed of his patent. Although the patentee is apparently protected, he receives none of the privileges of the "certified" inventor, but his status may be changed from that of patentee to that of inventor. There is no patent convention between the U.S.S.R. and the U.S.A. L.R.B.

Plans for the postwar kitchen. ANON. *Ceram. Ind.*, **43** [5] 54 (1944).—Results of recorded preferences of more than one million visitors to a model kitchen are given. 1 illustration. H.T.

Power required in milling with negative-rake cutters. HANS ERNST. *Machinery* [N. Y.], **50** [7] 197–99 (1944).—The results of investigations conducted by the research laboratory of the Cincinnati Milling Machine Co. show that, although power requirements for negative-rake cutters are higher at normal speeds, they decrease with higher cutting speeds to below the power required for positive-rake cutters. 3 charts. E.W.R.

Precision thread-rolling with flat and cylindrical dies. HOLBROOK L. HORTON. *Machinery* [N. Y.], **50** [7] 158–69 (1944).—Large quantities of screws and studs are being thread-rolled to meet exacting standards. High production, increased tensile strength, and superior surface finish are the advantages of this process. 21 illustrations. E.W.R.

Reinstatement—the human approach. ANON. *Glass*, **21** [10] 269–70 (1944).—Factors governing the employment of returning servicemen are discussed, such as (1) a temporary reaction against all forms of discipline, (2) selection of the proper type of job for the man, (3) utilization of the qualities of discipline, loyalty, and teamwork, and (4) abilities in leadership developed while in service. B.C.R.

Schools for artisans. O. J. FERGUSON. *Jour. Eng. Education*, **30** [10] 831 (1940).—Normally, industry's need for skilled artisans is filled by low-standard engineering students. These subgrade students are just as unsuited in their education for jobs as artisans as they are unsuited for engineering jobs. Schools for artisans should be established. E.W.R.

Suppression of dust by system of water infusion in coal seams. P. T. JENKINS. *Proc. S. Wales Inst. Engrs.*, **59** [3] 306–414 (1944). L.R.B.

Tariffs an important contribution in the development of the United States. AMERICAN GLASSWARE ASSN. *Bull. Amer. Ceram. Soc.*, **24** [5] 185 (1945).

Utilization of exhaust steam. G. E. HIDER. *Fuel Econ. Rev.*, **23,** 37–46 (1944).—A survey of thermodynamical theory and of practice. Illustrated. E.R.V.

Why we have silicosis in the State of Ohio. DON HANNA. *O. I. C. Monitor*, **18** [4] 49 (1945).—Claims filed for compensation due to silicosis from plants with a dust concentration of over 5 million particles were double the number filed from shops with concentrations under 5 million. Dust concentrations were kept to a low level by systematic cleaning operations, adequate hoods and ventilating systems, proper exhaust pressures, and mechanical shakeouts in foundries. Proper exhausting of grinder dusts and proper use of respirators were also factors. C.S.P.

Wire rope. ANON. *Natl. Safety News*, **52** [3] 115, 117, 124 (1945).—Twelve types of wire-rope construction adequate for most industrial applications are considered for their resistance to abrasion and to bending fatigue. Uses of the various types are listed, and grades of rope are given. Proper lubrication is essential to wire rope. 2 illustrations. M.R.

SEPARATE PUBLICATIONS

Hazard of Hydrogen Fluoride Poisoning in the Mineral and Allied Industries. R. R. SAYERS AND SARA J. DAVENPORT. *U. S. Bur. Mines Information Circ.*, **7311,** 51 pp. (1945). Free.—Prompted by the increasing use of hydrogen fluoride and its occurrence as a by-product in the mineral industries, the Bureau presents a comprehensive review of available literature covering the hazards, prevention, and treatment of hydrogen fluoride poisoning. 81 references. R.A.H.

Surface Storage of Explosives. D. HARRINGTON AND R. G. WARNCKE. *U. S. Bur. Mines Information Circ.*, **7307,** 16 pp. (1945). Free.—Sketches and drawings show the basic requirements for explosives magazines designed to prevent theft, fire, deterioration, and detonation of the contents. Suggested materials and types of construction are based largely on regulations and latest requirements of the Federal Explosives Act. Effects of improper storage are also discussed. 13 illustrations. R.A.H.

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THE BULLETIN SECTION

Volume 24 June 15, 1945 Number 6

JOHN DAVID RAMSAY

JOHN DAVID RAMSAY*

President, North American Refractories Company, Cleveland, Ohio

The Ligonier Valley in Pennsylvania

John David Ramsay, one of three boys, was born and raised on a farm in Ligonier Valley in Pennsylvania. He worked largely on the farm doing all kinds of work and attended a country school two miles away. Obviously, it was necessary for him to get up early in the morning to milk the cows, feed the hogs, water the horses, and do all kinds of chores before going to school. The same routine was followed in the evenings. He tells of piling potatoes and apples in the garden and covering them with dry straw and then with dirt to keep them for the winter.

At the age of fourteen, having lost both father and mother, it was necessary for John to earn a living. The next two and one half years, he did all kinds of work, often working for farmers at $8 a month and board. He relates that the highest pay he received for that work at any time was $12 a month. He drove a milk wagon for a while and worked on the railroad tracks as a day laborer when he was sixteen years old at $1.35 a day—and nothing extra for more than forty hours a week. After he passed his sixteenth birthday, the old country doctor, who brought him into the world, told him that he had incipient tuberculosis. His mother and one of his brothers had died of tuberculosis. He asked what he could do about it, and the doctor said that if he had funds, which he did not have, he could probably be cured by going to Colorado. That was a little too big a contract for John. When he asked what else he could do, the doctor told him that if he had nerve enough to do it, he would get him a job in a lumber camp; if he would stay there for at least two years, he was quite sure it would cure the start of this disease. This proposition was accepted.

John went to the lumber camp, doing light work at first. As the months went on, he was able to do all kinds of work in the camp, making railroad ties and locust posts, peeling bark, and working in the lumber mills. He was there for a little more than two years, and it did cure him. When he entered the camp, he weighed 129 pounds; when he left, he weighed 170 pounds.

While in the camp, John decided he would like to prepare for a school-teaching job. He obtained the necessary books and studied at nights. At the expiration of two years and four months, he took an examination for country school teacher. He obtained what was called a "provisional certificate." He had to take examinations each year. He finally obtained an assignment to a "tough" school which had previously run out two teachers, one a woman and the other a man. John must have gotten along pretty well, because the parents of the children requested that he be rehired for the second year. He started teaching at $28 a month; the second year, he was paid $32 a month; and the third year, he received $35 a month. Then he was elected assistant principal of the school of the Burrough of Bolivar, Pennsylvania, a little town sixty miles east of Pittsburgh on the main line of the Pennsylvania Railroad. That town had practically but one industry—refractories. The largest company there was the Reese-Hammond Fire Brick Company. They had their main office and a Company store at that place, and all of the officers and directors lived there.

The Reese-Hammond Fire Brick Company

John started teaching school in Bolivar in September, 1899. Naturally, he became acquainted with the managers of the Reese-Hammond Fire Brick Company. One night, when he was in his room reading and studying, with the use of a kerosene lamp, one of the Hammonds came to the door of the boarding house and asked to see him. He wanted to know if John would care to come over to his house. This man was one of the directors of the schools and had a rather difficult daughter to handle in school, so John thought perhaps he was in trouble. After a few preliminaries, John was asked if he would consider entering the refractories industry. A brief talk followed. Because the General Manager and Vice-President of the Company were then in the office a few blocks away, Mr. Hammond suggested that John go with him to the office.

This was a preliminary meeting, and arrangements were made for a further discussion at a later date. This was in November, 1899. At the second discussion, John asked what his duties would be. They could not tell, except that as a starter he would have to sweep the office, dust the desks, fill the kerosene lamps, and whatever else anybody wanted him to do during the remainder of the day. He was expected to remain until the office closed at night, which often was ten o'clock. They offered him $40 a month. John was receiving $60 a month teaching school and looked forward to the time when he could take up law. The $60, however, covered only seven months, and the $40 a month offered by Mr. Hammond covered twelve months, so he figured he would at least be as well or a little better off financially and that he would be learning the business. Accordingly, he resigned as assistant principal of the schools and on the 26th of December, 1899, he started his climb from office boy to the presidency of the North American Refractories Company.

John found that the work as office boy was just what they said it would be. From time to time, he was given other work to do, some in the accounting department, a little in the filing department, and carrying messages back and forth to the four plants which the Reese-Hammond Fire Brick Company operated. John learned a great deal about office practice and finally got so he could operate a typewriter by using one finger on each hand. In due course, they gave him an assignment as shipper at one of their plants. Here he remained for a few months.

Early in 1901, their only salesman went to Fairmont, West Virginia, to take charge of a plant which the Company had acquired, so the General Manager gave John an

*For inspiration to young men, Mr. Ramsay agreed, though reluctantly, to allow this detailed recital of his personal and business history.—THE EDITOR

opportunity in the Sales Department. John covered practically all the eastern part of the United States, from Chicago to Boston, and a great deal of eastern Canada, making trips from three to six weeks long; he devoted most of his time, however, to Pittsburgh and the Connelsville coke field.

Becomes Sales Manager

In the early part of 1902, John was given the title of Sales Manager. He was located in offices at 912–14 Park Building, Pittsburgh, Pennsylvania, but without assistants. He continued to make trips east and north, but the greater part of his time was spent in Pittsburgh. His salary at that time had risen from $40 a month to $2500 a year.

The Reese-Hammond Company acquired a plant near Fairmont, West Virginia, and built the plant which is now owned by the North American Refractories Company at Curwensville, Pennsylvania. Unfortunately, the expansion was made on short-term notes and during the money panic in the fall of 1903 all of the banks wanted their money at the same time. A receiver was appointed for the Company and its subsidiaries. John wanted to quit, but Mr. Hammond prevailed on him to remain with the Company. He did so until November 1, 1904.

John then went to St. Marys, Pennsylvania, where the Elk Fire Brick Company had built a plant in 1901 under the direction of W. S. Ravenscroft. Several other companies which Mr. Ravenscroft had promoted had failed. The Elk Fire Brick Company was closed. It had a capacity of one small carload a day, provided everything worked right, and a capital of $35,000. John purchased one seventh of the capital stock of the Elk Fire Brick Company and became Secretary and General Manager of the Company. The Company had a debt of $37,000, so the future was rather blue.

John began operating the Elk Fire Brick Company plant about the first of January, 1905, and in 1907, two years later, they tripled the capacity of the plant. A salesman and office help were employed.

In 1911, the Elk Fire Brick Company acquired the Dagus Brick Company five miles west of St. Marys. The Dagus Company had been making building brick. Here John started the manufacture of third-quality firebrick.

Elected President of Elk Fire Brick Company

John was elected vice-president in 1911 and president in 1912 and remained as head of the Company until the consolidation of the North American Refractories Company in 1929. In the meantime, the Elk Fire Brick Company had acquired the Renovo Fire Brick and Clay Works at Renovo, Pennsylvania, had rebuilt the plant, and had modernized it as plants were modernized in those days. The Company at that time had a total capacity of sixteen cars a day.

The formation of the North American Refractories Company was necessary if the small companies were to meet the competition. The small companies had great problems, which undoubtedly would have been difficult to solve; geographical location was one of them, research on a broad scale was another, sales contacts another. No one, of course, foresaw the depression, but it was necessary for the protection of the stockholders and the properties to join hands to have proper geographical production, expanded research work, and sales contacts to compete with the larger companies. This forward-looking was correct.

When the North American Refractories Company was formed, John D. Ramsay was asked to become the head of the consolidation. The depression set in soon after the organization was set up and the "going was tough." The Company, however, has been kept intact, and the products have been improved.

THE NORTH AMERICAN REFRACTORIES COMPANY

The North American Refractories Company came into existence January 1, 1929, by a consolidation, then and subsequently, of the following companies: the Ashland Fire Brick Company, the Crescent Refractories Company, the Dover Fire Brick Company, the Elk Fire Brick Company, the Farber Fire Brick Company, the Queens Run Refractories Company, the Savage Mountain Fire Brick Company, the United States Refractories Corporation, and the silica brick plant of E. J. Lavino & Company at Womelsdorf, Pennsylvania.

The formation of the Company was handled by Blair & Company, of New York, but was guided by John Ramsay, E. M. Weinfurtner, H. E. Stuhler, and the late J. M. McKinley, J. H. Cavender, and T. N. Kurtz, all of whom became officers and active directors of the Company. They regret greatly the loss of Messrs. McKinley, Cavender, and Kurtz.

Ashland Fire Brick Company

This Company at Ashland, Kentucky, was a pioneer in the manufacture of firebrick from the flint and semiflint clays of Carter County, Kentucky. It was incorporated May 17, 1886. In March, 1900, they purchased the Clinton Fire Brick Works with a plant at Ashland and mines at Soldier, Carter County, Kentucky. In January, 1903, they purchased the Ironton Fire Brick Company (no connection with the present Ironton Fire Brick Company). This Company had two plants. One was located at Hayward, Kentucky; the other, located at Ironton, Ohio, was resold and later dismantled.

Crescent Refractories Company

This plant at Curwensville, Pennsylvania, was originally built by the Reese-Hammond people (interested by Sam Arnold) in 1900–1901 as the Curwensville Fire Brick Company. In 1905, the Company was incorporated under the name of the Bickford Fire Brick Company, which name was changed to the Crescent Refractories Company January 1, 1918. The Bickfords gave up their interest early during World War I. At that time, H. T. Janey was president (until 1920); J. B. Graham was president until 1928. November 7, 1919, the Clearfield Clay Working Company, the George S. Good Fire Brick Company at Lumber, Pennsylvania, and the Crescent Refractories Company were merged into the Crescent Refractories Company.

Dover Fire Brick Company

In 1857, a small plant was started at Canal Dover to serve a blast furnace and rolling mill which had been built there. This plant was called David Miller & Son. In

1870, the plant was sold to C. S. Barrett and James F. Rhodes. Mr. Rhodes later sold his interests to Mr. Barrett. During this year, the Dover Fire Brick Company was incorporated. It was necessary to haul the clay from the vicinity of Strasburg, Ohio, to the plant. This proved to be quite expensive, and the plant was abandoned in 1889. In 1890–1891, a new plant was built at Strasburg, Ohio. C. S. Barrett was sole owner until February, 1900, when certain interest was transferred to George H. Ganson. In 1905, this interest was transferred to F. C. Preston and in 1907 to H. E. Stuhler. After Mr. Barrett's death, Mr. Hawkins and Mr. Bowen received interests. In 1914, Plant No. 2 was built at Strasburg.

Elk Fire Brick Company

This Company, with an original plant at St. Marys, Pennsylvania, was organized in 1901. In 1911, it absorbed the Dagus Brick Company at Daguscahonda, Pennsylvania, and, in 1916, the Renovo Fire Brick Works at Renovo, Pennsylvania.

Farber Fire Brick Company

This Company was organized in 1916 as the Farber Clay & Mining Company to produce crude fire clay. In May, 1917, it became engaged in the production of refractories. The ground was broken July 1, 1917, for tunnel kilns (the first tunnel-kiln plant in the West). Finally, the plant was put into operation in March, 1918. It was built under the supervision of W. K. Brownlee, Benjamin Hill, and R. H. Miller. In 1919, the name was changed to the Farber Fire Brick Company. The principal interest in the Company was owned by the late M. J. Owens.

Queens Run Refractories Company

This Company was organized in 1836 at Queens Run, Clinton County, Pennsylvania, by Benjamin Perry and others of the Company known as Hollenbeck, McConnel & Company. The plant passed through several hands, including Messrs. Mackey, Graffins, and Scott, Messrs. Hines, May, and Greenough, and Barton Pardee in 1883, as the Queens Run Fire Brick Company. Although operated by Mr. Pardee, Dave Salmon acted as manager and his son, George, as a salesman. John Wynn and James Bickford were also associated with the Company. Mr. Salmon did not go along on the Pennsylvania Fire Brick Company project at Beech Creek.

In 1887, the plant was moved to Lock Haven, Pennsylvania, and Troy interests purchased it from Barton Pardee. The Troy interests, chiefly, were William Sleicher, Harvey S. McLeod, and William C. Geer.

The Company was incorporated following the purchase by the Troy interests. In 1921, the name was changed to Queens Run Refractories, Incorporated, and was formed by the consolidation of the following companies:

(1) The Queens Run Fire Brick Company.

(2) The Gleasonton Fire Brick Company, which was built in 1901, and headed by Irving W. Gleason, A. P. Peasley, Archie Monroe, and Fred P. Miller. This Company went into receivership in 1912, and H. S. Sleicher was appointed receiver. He sold it to William Sleicher in April, 1913, and he in turn sold it to the North Bend Fire Brick Company in May, 1913. The North Bend Fire Brick Company was operated as a subsidiary of the Queens Run Fire Brick Company.

(3) The West Branch Fire Brick Company at Renovo, Pennsylvania, was originated in July, 1901, by Josiah Howard, C. F. Barclay, A. N. Stevenson, J. O. Brookbank, John F. Foley, and B. F. Geary. This plant was sold to the Queens Run Fire Brick Company in 1917 and operated as a subsidiary until 1921.

Savage Mountain Fire Brick Company

This Company was purchased by the North American Refractories Company in 1930. It was organized in 1864 to manufacture high-grade firebrick. The plant was started by L. M. Gorsuch and was operated by his heirs, exclusively, until it was sold to the United States Refractories Corporation in 1926–1927. When it was sold, the deal was consummated by Mrs. Helen Caldwell, acting president and a grand-niece of L. M. Gorsuch, founder.

United States Refractories Corporation

This Corporation was purchased by the North American Refractories Company in 1930. It was incorporated in 1911 as the Mount Union Refractories Company, Mt. Union, Pennsylvania, and was headed by R. P. M. Davis, President; F. D. Halstead, Secretary and Treasurer; and C. V. Hackman, Superintendent. It was designed and engineered by Charles A. Searing, of Pittsburgh. At that time, it acquired approximately 1442 acres of ganister land, and later 4000 additional acres. In 1917, its capacity was increased to about the present facilities. In 1915, this Company organized the Kistler Land & Improvement Company to build houses for employees. In 1919, it authorized the building of a firebrick plant at Barrett, Clearfield County, Pennsylvania. On December 27, 1920, the name was changed to the United States Refractories Corporation. In February, 1927, it acquired the Savage Mountain Fire Brick Company at Frostburg, Maryland. In April, 1926, it acquired the Dunlap Coal Company.

Womelsdorf Plant

This silica brick plant was purchased from E. J. Lavino & Company in 1936. It was built in 1919 with six 38-foot downdraft kilns. In 1920, two additional kilns were built and the storage facilities were extended.

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The North American Refractories Company at present operates plants at the following points: *firebrick:* Lock Haven, Renovo, St. Marys, Curwensville, and Lumber City, Pennsylvania; Strasburg, Ohio; Ashland and Hayward, Kentucky; and Farber, Missouri; *silica brick:* Womelsdorf and Mt. Union, Pennsylvania.

It has dismantled seven plants at Ashland, Kentucky; Strasburg, Ohio; Frostburg, Maryland; and Daguscahonda, Renovo, North Bend, and Clearfield, Pennsylvania.

This was brought about by the fact that the quality of refractories, generally, has been so much improved that the life is nearly double that of 1924. Most of these improvements in quality have been made since this Company came into existence. The production is not only affected by improvements in products but by the development of new products, such as high-temperature cement, plastic firebrick, superduty firebrick, and various others. Of course the consumer has changed to larger and more effi-

cient units, better engineering, better bricklaying, and perhaps better control over the operation of the units. This applies to practically every industry. All of these things brought about less need in units, but it has not been offset by a corresponding increase in price. Without having definite figures, it would seem as though the refractories industry did not produce more than three fourths as many units of refractories in 1942 as it did in 1918. Perhaps it has produced less than that, but the fact that the life of the products has been doubled in twenty years is the answer.

Notwithstanding the great construction program for the war, the total did not equal the production of 1918. This is very interesting when figuring that the steel industry in 1918 produced about 50,000,000 tons of ingots, whereas in 1942 it produced 90,000,000 tons of ingots. This information ties in with the fact that there has been a substantial reduction in production capacity by the elimination of the plants mentioned previously.

The North American Refractories Company is the third largest company in the industry and produces all kinds of refractories, with the exception of basic refractories.

By rising from office boy at $40 a month to the presidency of a consolidation of nine firebrick companies, John D. Ramsay has shown unusual ability and leadership.

CLYDE WILLIAMS AWARDED DOCTOR'S DEGREE

In the prosecution of total war there are many men behind the scenes whose specialized talents and untiring efforts contribute heavily to the punch that assures victory.

Such a man is Clyde Williams, who, as chairman of the War Metallurgy Committee of the National Academy of Sciences and the National Research Council and Chief of the Metals Division of the NDRC of the Office of Scientific Research and Development, has been one of the leading figures in guiding the mobilization of our metal resources. In both his capacity as chief of these advisory groups to the Army, Navy, and War Production Board and in his capacity as director of Battelle Memorial Institute, Columbus, Ohio, he has given unsparingly of his time and energy to aid in the solution of the country's many and diverse metal problems in wartime.

Mr. Williams became associated with national defense activities long before Pearl Harbor. At the request of the then Assistant Secretary of War and the Assistant Secretary of the Navy, he served as chairman of the Nickel Subcommittee of the Mineral Advisory Committee to the Army and Navy Munitions Board as early as 1939. The following year, he was named chairman of two important technological committees which served in an advisory capacity to the Advisory Commission to the Council of National Defense.

In 1941, Mr. Williams was appointed by the National Academy of Sciences and the National Research Council to head its advisory service to the Office of Production Management (now the War Production Board). Later, when this service was extended to include the functions of the present War Metallurgy Committee, he was retained as its active head. Thus, from the days before our feverish defense activities, up through Pearl Harbor and subsequent months of preparation, and finally through the months of conflict leading to imminent victory, Mr. Williams has been at the helm of the mobilization of the country's metallurgical "know-how."

The accomplishments of this committee of scientists are matters of record—visible on every Allied battlefront. By the integration of technological knowledge made possible by Mr. Williams' committee, working in close cooperation with the Army, Navy, Office of Scientific Research and Development, and War Production Board, American science and industry have united to create a gigantic metal-producing machine. This machine has made it possible for us to deliver the goods to our men at the front in quantities neither too little nor too late.

During the same time, Mr. Williams has had active direction of the research activities of Battelle Memorial Institute, which itself has made numerous contributions to the war. This Institute, one of the largest research foundations in the country, was awarded the Ordnance Distinguished Service Award in September, 1944, for meritorious contributions to the war effort.

Clyde Williams

In recognition of his varied achievements, the Case School of Applied Science has awarded Mr. Williams (April 22, 1945) the honorary degree of Doctor of Science. In presenting the degree, William E. Wickenden, president of Case, paid the following tribute:

"Notable among the administrators of research, you are numbered in the vanguard of the pioneers of a new era. Through your leadership, knowledge has increased, technology advanced, industry made more productive, the nation's defense made more secure, and science raised to new levels of influence and service."

Clyde Williams has been actively engaged in the direction of scientific research for more than thirty years. He received his education at the University of Utah, from which he received a Bachelor of Science degree in chemical engineering in 1915.

After his graduation, he served as a chemist for the United States Smelting Company and later as a graduate fellow of the United States Bureau of Mines and chemist for the Santa Fe Copper Company, United States Smelting Company, and the Hooker Electrochemical Company. In these positions he obtained a diversity of experience in lead, zinc, and copper smelting, alloy steels and ferroalloys, and a keen appreciation of technological problems of the metals industry. In 1920, he was made superintendent of the Northwest Experiment Station, U. S. Bureau of Mines, where he supervised research on iron and steel metallurgy, refractories, and coal beneficiation and utilization. Four years later, Mr. Williams went to Argentina with H. Foster Bain, former director of the U. S. Bureau of Mines, on a commission for the Argentine Government to advise on the development of its iron and fuels resources.

Returning to the United States, Mr. Williams became chief metallurgist for the Columbia Steel Corporation in 1925. In 1929, he was appointed assistant director of the newly organized Battelle Memorial Institute, and in 1934 was made director of the rapidly growing research foundation.

Mr. Williams is active in engineering and technical societies and has held numerous positions on technical society committees. He is a member of The American Ceramic Society, the Mining and Metallurgical Society of America, the American Institute of Chemical Engineers, the American Society for Metals, the American Iron and Steel Institute (received Institute Medal, 1936), the Electrochemical Society (former member, Board of Managers), the American Railway Engineers Association, the American Refractories Institute, the British Iron and Steel Institute, Sigma Xi, honorary scientific society, and the American Institute of Mining and Metallurgical Engineers. He has served as a director of the A.I.M.E.; is past-chairman of its Iron and Steel Division, past-secretary of its Open Hearth Committee, and past-chairman of its membership committee.

Recognized as one of America's leading industrial research executives, he currently serves as technical consultant of the Association of American Railroads and as a member of the Welding Research Council of the Engineering Foundation. For the past two years Mr. Williams has acted as a member of the Research Advisory Committee for the National Association of Manufacturers. He is also a member of the Materials Research Committee of the National Advisory Committee for Aeronautics.

Known also as an engineer and scientist, Mr. Williams is a prolific writer on metallurgy, ceramics, and fuels and on the economics of engineering materials and has numerous patents to his credit.

The education of young scientists, too, may be included among Mr. Williams' major interests. It is his conviction that modern society is built on men of skill and vision and that "the training of such men to high accomplishment is one of our greatest responsibilities."

Perhaps this conviction stamps Mr. Williams—the man. Human and approachable, with love for family and coworker, he is himself a man of keen understanding and skill and—above all—vision.

EDWIN MORTIMER BLAKE

Specialist in Geometric Decorative Design, Mount Kisco, New York

A Member of The American Ceramic Society since 1922

Edwin M. Blake in his study at Mount Kisco, N. Y., October, 1944

Edwin M. Blake was born in New York, N. Y., June 16, 1868. He received a degree of E.M. from Columbia in 1890 and Ph.D. in 1893. He was instructor in mathematics at Purdue University during the years 1896 to 1899, inclusive, and at California 1900 to 1904, inclusive. He served as professor of mathematics and mechanics at the University of Arizona during the years 1904 to 1910, inclusive.

Dr. Blake submitted to this Society for publication a paper entitled "A Method for the Creation of Geometric Designs Based on Structure." It has just been published in the June, 1945, issue of *The Journal*, pp. 156–67.

Corporation Members

Corporation Members have an important place in The American Ceramic Society. Their membership is a manifestation of interest in the scientific phases of the industry by the managements of the respective companies. As such, they serve to support the technological progress of the ceramic industry, not only by financial aid, but by the prestige of their names.

The American Ceramic Society presents to the membership in the following pages a list of the companies which are lending support to this work. With each name is given a description of the products or services of the company. Sufficient space was not available to give an adequate listing; just enough is given to classify each company and its products. This should be helpful in answering the question, "What do they make?" The name of the individual who represents the company in Society affairs is also given.

This listing should not be considered as an adequate sales description of the products. Company members desiring such publicity are referred to the several trade directories for the industry. Those who supply the ceramic industry and wish to tell a real sales story are referred to the advertising pages of the many trade papers or to *The Bulletin of The American Ceramic Society*.

It is hoped that this Roster may be revised yearly and that succeeding issues will give better coverage of the industry, especially of foreign members.

The Society presents its Corporation Members to you. Get acquainted with them. They are the leaders.

Abbé Engineering Co. H. F. Kleinfeldt
50 Church St., New York 7, N. Y.
Manufacturers of pebble mills, ball mills, tube mills, jar mills, jar rolling machines, liquid mixers, dry mixers, and sifters of special and standard design.

Abingdon Potteries, Inc. R. E. Bidwell
Abingdon, Ill.
Producers of vitreous china plumbing fixtures, vitreous china specialties, vitreous china artware, and kindred lines; also miners and grinders of the famous Abingdon feldspar.

A C Spark Plug Div., General Motors Corp. T. G. McDougal
Flint 2, Mich.
Manufacturers of automotive and aircraft products; spark plugs, oil filters, bearings, fuel pumps, air cleaners, speedometers, and other instruments; one of the major builders of war products: .50-caliber machine guns, bombsights, aircraft bearings, and aircraft spark plugs.

Adamston Flat Glass Co. Eugene Rolland
Box 631, Clarksburg, W. Va.
The products of this company, manufactured under the trade name Clearlite, are sheet glass of various thicknesses from thin (weighing approximately 14 to 16 ounces per square foot to $^{7}/_{16}$ inch) and bulb-edge glass for shelving, cabinets, and counter dividers.

Akron Porcelain Co. F. W. Butler
Akron 14, Ohio
Manufacturers of special electrical porcelain parts which are made to the customers' specifications and blueprints by the dry-press process. More than half a century of experience in producing unglazed white porcelain, unglazed gray porcelain, and glazed porcelain for the electrical and communications industries.

Alabama Clay Products Co. A. S. Holberg
830–835 Martin Bldg., Birmingham, Ala.
Manufacturers of firebrick, successors to the Bessemer Fire Brick Company, who have been making firebrick at their Bessemer, Ala., plant continuously since 1887. Refractories for the foundry and steel industries.

Alton Brick Co. Rand Rodgers
Alton, Ill.
Manufacturers of buff and red face brick of all shades, load-bearing and partition structural tile, and paving brick. Distributors of Owens-Illinois glass blocks and dealers in glazed brick and tile. The St. Louis office is at 3832 West Pine Boulevard.

American Clay Forming Co. Ross Stoffer
Tiffin, Ohio
Manufacturers of radiants and backwalls for gas heaters, special refractories for oil- and gas-burning furnaces, and special shapes of high-temperature refractories.

American Colloid Co. Paul Bechtner
363 W. Superior St., Chicago 10, Ill.
Producers of bentonite, with special grades for the ceramic industry.

American Crucible Co. R. E. Burdett
Shelton, Conn.
Manufacturers and distributors of crucibles, retorts, superrefractories, refractory cements, and Shelton metallic fillers; crucibles are for melting ferrous and nonferrous metals; one-piece linings for crucible melting furnaces and teardrop base blocks.

American Emery Wheel Works Harold O. Skoog
1 Richmond Square, Providence 1, R. I.
Established in 1898 as manufacturers of Aluminox and Carbolite grinding wheels, segments, rubbing brick, stones, cutoff wheels, and abrasive specialties; also Aluminox and Carbolite abrasive grains and flours.

American Gas Association C. G. Segeler
420 Lexington Ave., New York 17, N. Y.
The central trade association serving all branches of the gas industry, including gas companies, gas-equipment manufacturers, and several thousand individual members; maintains testing and research laboratories at Cleveland and Los Angeles where gas appliances are checked for compliance with American Standards Association requirements.

American Glassware Association H. L. Dillingham
19 West 44th St., New York 18, N. Y.
An association of glassware manufacturers which provides statistical information for its members and represents them in governmental and public relations; maintains a traffic committee, a tariff committee, and other committees on special subjects.

American Lava Corp. Paul J. Kruesi
Chattanooga 5, Tenn.
A pioneer manufacturer of ceramic insulating materials for electrical, thermal, chemical, and mechanical uses. Producers of AlSiMag by extrusion, dry-pressing, and casting processes, with special surface treatments and precision ground for close tolerances; also Lava bodies to especially close dimensions for similar uses.

American Nepheline Corp. H. R. Deeth
Box CH 67, Rochester, N. Y.
Engaged in the production of a sodium aluminum silicate rock called nepheline syenite. A granular product is produced for the glass industry and a 200-mesh product for use in the whiteware and associated industries.

American Optical Co. E. D. Tillyer
Southbridge, Mass.
Manufacturers of eye-examining instruments, spectacle frames and lenses, and industrial safety equipment. Through their scientific instrument division, the Spencer Lens Co., Buffalo, N. Y., they produce microscopes, projectors, and other scientific instruments.

American Porcelain Enamel Co. Robert Long
1205 Keating Ave., Muskegon 36, Mich.
Manufacturers of porcelain enamel frit for all purposes and in all colors for application on stoves, refrigerators, signs, and washing machines; also heat- and corrosion-resisting enamel for exhaust manifolds.

American Potash & Chemical Corp. R. M. Curts
122 East 42nd St., New York 17, N. Y.
Producers of potassium chloride, potassium sulfate, salt cake, borax, boric acid, soda ash, bromine, bromides, and crude lithium phosphate. Borax, boric acid, soda ash, and salt cake are supplied in large quantities to the ceramic industry, and in connection with their use the company offers technical service.

American Radiator & Standard Sanitary Corp. Erwin Sohn
1541 South 7th St., Louisville 8, Ky.
Manufacturers of cast-iron enameled plumbing fixtures; all types of plumbing and heating equipment.

American Radiator & Standard Sanitary Corp., Trenton Works H. S. Magid
Box 907, Trenton 5, N. J.
Manufacturers of all types of plumbing and heating equipment.

American Refractories Institute W. J. Westphalen
1872 Railway Exchange Bldg., St. Louis 1, Mo.
An association of refractories manufacturers whose object is to serve the refractories industry as a clearinghouse for the interchange of information pertaining to the mutual interest of manufacturers and consumers.

American Rolling Mill Co. F. G. Sutphen
Middletown, Ohio
Armco is one of the oldest prime producers of enameling iron for porcelain enameling purposes. This company also produces a complete line of special-purpose iron and steel and stainless-steel sheets and strip for every conceivable need.

American Smelting & Refining Co. L. G. Matthews
120 Broadway, New York 5, N. Y.
Engaged in the smelting, refining, and marketing of nonferrous metals, primarily copper, lead, and zinc. In conjunction with these activities, it produces antimony oxide, arsenic, cadmium, and selenium, all of which are used as raw materials in the ceramic industry.

American Stove Co. Arthur Stockstrom
2001 S. Kingshighway Blvd., St. Louis, Mo.
Manufacturers of Magic Chef domestic gas ranges, heavy-duty cooking equipment, combination gas and coal ranges, and bungalow ranges; also Quick Meal coal ranges and oil stoves, Quick Heat oil heaters, and Golden Glow gas space heaters.

American Valve & Enameling Corp. Charles A. Wulf
Box 114, Indianapolis 6, Ind.
Manufacturers of name plates, number plates, and instruction plates on war contracts; processing of aluminum battery boxes and parts for Army and Navy aircraft.

American Window Glass Co. A. S. Crandon
Farmers Bank Bldg., Pittsburgh 22, Pa.
Manufacturers of clear sheet glass in thicknesses from 0.033 to 0.250 inch for glazing and scientific and industrial purposes; special glass for the photographic industry and the medical profession; colored glasses for sunglasses and decorative uses; safety glass for the automotive industry.

Amsler-Morton Div., Union Mining Co. P. M. Offill
Fulton Bldg., Pittsburgh 22, Pa.
Complete plants for manufacturing blown, pressed, rolled, drawn, polished, wire, laminated, and fiber glass and for manufacturing silicates of soda and rock wool; metal enameling; producer-gas systems; fuel-oil systems; glass-forming machines. Furnish construction and operating personnel.

Anchor Hocking Glass Corp. W. V. Fisher
Lancaster, Ohio
Anchorglass narrow- and wide-mouth jars, bottles, and jugs; metal and plastic closures and sealing machines; home-canning jars and caps; Fire-King Ovenglass; table and kitchen glassware; hotel, bar, and restaurant glassware; industrial and premium items.

Arketex Ceramic Corp. George W. Shoemaker
Brazil, Ind.
Manufacturers of ceramic glazed structural building tile for permanent and sanitary walls in buildings such as hospitals, food plants, etc.; standard size 5 by 12 by 4 inches; two-plant output.

Armstrong Cork Co. E. C. Emanuel
Central Technical Lab., Lancaster, Pa.
Producers of glass containers, cork stoppers, metal and molded closures, insulating firebrick, corkboard, pipe covering and other insulating materials, linoleum, asphalt tile and other floor materials, wall coverings, acoustical material, gaskets, seals, and many industrial specialties. Distributors of Foamglas and glass-wool insulation.

Ashworth, George L., & Bros., Ltd. R. L. Evans
Broad St. Works, Hanley, Stoke-on-Trent, England
Sole manufacturers of Mason ironstone china, the original ironstone china first patented in 1813. This immensely durable tableware is made in a comprehensive range of well-known imperishable underglaze stock patterns of unique period character.

Associated Engineers, Inc. Paul A. Mankin
230 E. Berry St., Fort Wayne 2, Ind.
An organization of licensed professional engineers and architects serving the Midwest with a complete management, industrial, and architectural consulting service. The staff is composed of especially trained engineers with broad educational backgrounds, who possess years of experience in their chosen fields.

Austenal Laboratories, Inc. Paul F. Collins
5932 Wentworth Ave., Chicago 21, Ill.
Manufacturers of cast Vitallium dental restorations; Micromold (porcelain) teeth; Vitalon (resin) teeth; Vitalon denture material; and cast Vitallium orthopedic (bone) surgery appliances; also microcast-process precision castings and Vitallium turbine buckets for superchargers. Conduct research and development work for 200 affiliated dental laboratories.

Babcock & Wilcox Co. A. M. Kohler
85 Liberty St., New York 6, N. Y.
Manufacturers of special kaolin-base firebrick for high-temperature and heavy-load conditions, such as glass-tank superstructures and checkers, and enameling-furnace piers; insulating firebrick for temperatures up to 2900°F.; refractory mortars, plastics, and castables of standard and light weight.

Ball Brothers Co. G. A. Ball
Muncie, Ind.
Manufacturers of a general line of glass containers, including Ball-Mason fruit jars, at plants in Indiana, Illinois, Oklahoma, and Texas; makers of closures for glass containers, with zinc rolling mills to produce the zinc porcelain-lined caps for fruit jars and drawn zinc shells for dry-cell batteries; mechanical rubber goods by the Aridor Corporation, a subsidiary.

Bardin, Paul, e Hijos Sociedad Anónima Pablo Pedro Bardin
Pichincha 1245, Buenos Aires, Argentina

Bartlett-Collins Co. D. C. Hamilton
Sapulpa, Okla.
Manufacturers of machine-made table glassware, both blown and pressed; a goodly percentage of this line is tumblers, screen process and hand decorated; normal distribution in the entire United States as well as in Central and South American countries.

Bausch & Lomb Optical Co. Murray Scott
Rochester 2, N. Y.
Established in 1853 in Rochester, N. Y., this company manufactures optical glass and a complete line of optical instruments for military use, education, research, industry, and eyesight correction and conservation.

Bay State Abrasive Products Co. O. S. Buckner
Westboro, Mass.
Manufacturers of a complete line of abrasive products, including precision grinding wheels, hones, diamond wheels, and polishing wheels; also crystalline alumina and silicon carbide refractories. Stocks are maintained in Chicago and Detroit together with a country-wide engineering service.

Belden Brick Co. P. B. Belden
Canton, Ohio
Producers of common brick, face brick, paving brick, and firebrick.

Bell & Howell Co. R. B. Snyder
7100 McCormick Rd., Chicago 45, Ill.
Fine motion-picture professional and amateur (8-, 16-, and 35-mm.) cameras, projectors, accessories, laboratory equipment, and precision optical devices are made, sold, and serviced at nine plants and laboratories for world distribution; precision instruments for war.

Bellaire Enamel Co. Charles Kapner
Bellaire, Ohio
Prewar products: high-quality vitreous enamelware, baked enameled items, and steel products for home, restaurant, and hospital use; also fabricated steel shapes for other manufacturers. War products: critical items in plain steel, stainless steel, and enamel for the armed forces and essential civilian ware.

B. G. Corporation Frank J. Fallon
Ridgefield, N. J.
Manufacturers of spark plugs for aircraft and industrial types of operation. Associated items include spark-plug terminal sleeves, elbows, and a completely sealed flexible ignition harness for aircraft engines.

Binghamton Brick Co. Clarence P. Austin
Binghamton, N. Y.
Manufacturers of common, paving, and face brick.

Binks Manufacturing Co. E. F. Watts
3114 Carroll Ave., Chicago, Ill.
Manufacturers of spray guns and pressure equipment for the application of paints, glazes, and porcelain enamels; also spray booths and exhaust systems.

Bliley Electric Co. J. M. Wolfskill
Union Station Bldg., Erie, Pa.
Producers of quartz crystals for electrical-frequency control.

Blue Ridge Glass Corp. J. H. Lewis
Kingsport, Tenn.
Manufacturers of rolled figured and wired lime glass; polished figured and wired glass; Aklo heat-absorbing glass; Securit (tempered) figured glass; special surface treatments: sandblasting, frosting, satinol; special rolled-glass products made to manufacturers' specifications.

Blythe Colour Works, Ltd. Norman R. Wildblood
Cresswell, Stoke-on-Trent, England
Manufacturers of vitreous enamels and colours for iron baths, electric cookers, refrigerators, hollow ware, kitchen utensils, and signs; colours and glazes for pottery, tile, sanitary ware, and glassware; dry colours for paint, plastics, rubber, and artists; enamels for badges and jewelery.

Bonnot Company B. T. Bonnot
Canton, Ohio
Engineers, designers, and constructors of machinery for the ceramic industry; clayworking machinery and deairing equipment.

Botfield Refractories Co. A. H. Engstrom
Swanson and Clymer Sts., Philadelphia 47, Pa.
Manufacturers of Adamant firebrick cement, a prepared, air-setting high-temperature bonding mortar; Adahearth, a plastic chrome-ore material for constructing hearths in billet heating and slag-tap boiler furnaces; Adachrome supercement, a chrome-ore base, air-setting bonding mortar.

Braun Corporation J. G. Stewart
2260 East 15th St., Los Angeles 21, Calif.
Suppliers of industrial chemicals, scientific apparatus, laboratory chemicals, and equipment. Together with their San Francisco house, they are the Pacific Coast agents for several large manufacturers, including the B. F. Drakenfeld & Co., Inc.

Brickseal Refractory Co. Rexford Newcomb, Jr.
1029 Clinton St., Hoboken, N. J.
Manufacturers and distributors of maintenance materials for use in connection with boilers, furnaces, and other high-temperature equipment. Brickseal, a glazed refractory coating, is applied by spraying or brushing; it fuses under heat to a glass, thereby improving the service life of the refractory.

Brisch Brick Co. Michael Brisch, Jr.
228 N. La Salle St., Chicago 1, Ill.
Manufacturers of common and face brick.

British Scientific Instrument Research Assn. A. J. Philpot
26 Russell Square, London, W.C. 1, England
An association, under the aegis of the Department of Scientific and Industrial Research, for conducting cooperative investigation into the problems arising in the course of scientific instrument manufacture for the scientific instrument industry of Great Britain.

Brockway Glass Co., Inc. F. B. Hess
Brockway, Pa.
Manufacturers of glass containers in both flint and amber; a complete line of pharmaceutical, proprietary, and prescription containers, also beers, whiskeys, foods, toilets, and perfumes; two fully automatic machine plants.

Buck Glass Co. R. A. Blunt
Fort Ave. and Lawrence St., Baltimore 30, Md.
One of the smaller companies which specializes in quality and service and has many "firsts" in the container industry; first deliberately to put alumina in milk-bottle glass; first to introduce commercially the square Space-Saver milk bottle; makers of a general line of flint-glass bottles.

Buffalo Pottery, Inc. R. E. Gould
1456 Seneca St., Buffalo 10, N. Y.
Manufacturers of plain and decorated vitrified hotel china for institutional uses.

Butcher, L. H., Co. W. D. Schwartz
2030 Bay St., Los Angeles, Calif.
Distributors of ceramic materials on the West Coast.

Cambridge Glass Co. W. L. Orme
Cambridge, Ohio
Manufacturers of a complete line of handmade blown and pressed glassware of high quality and correct design; stemware, tableware, vases, candelabra, epergnes, and all wanted pieces; lines complete in deep plate etchings, rock crystal, gold encrustations, and plain ware; druggists', laboratory, and photographers' glassware.

Canton Stamping & Enameling Co. Frank J. Hodnick
Canton 5, Ohio
Manufacturers of porcelain enameled steel utensils, both single and multiple coated, for the past forty years.

Carborundum Co. Otis Hutchins
Niagara Falls, N. Y.
Manufacturers of a complete line of abrasives, including cloth and paper articles, grinding wheels, and abrasive grains; refractories of the so-called superrefractory types using as a raw material either silicon carbide or fused aluminum oxide.

Carnegie-Illinois Steel Corp. J. C. Eckel
922 Carnegie Bldg., Pittsburgh 30, Pa.
Manufacturers of a comprehensive line of steel products, including sheets, tin plate, structural shapes, plates, bars, rails, and special sections in a complete range of chemical compositions; produce a special sheet for the porcelain enameling industry, USS Vitrenamel.

Carr-Lowrey Glass Co. Norman R. Beck
Box 356, Baltimore 3, Md.
Manufacturers of glass containers mostly for drugs, cosmetics, and household and industrial chemicals; hand-blown or semiautomatically blown bottles with ground stoppers, cut and polished, for perfumes.

Case, W. A., & Son Mfg. Co. Willard G. Young
Robinson, Ill.
Manufacturers of a complete line of plumbing equipment and fixtures.

Central Silica Co. R. G. Hay
Zanesville, Ohio
Producers of glass sand, enameling sand and flint, placing sand, and pottery flint.

Ceramic Color & Chemical Mfg. Co. W. F. Wenning
Box 297, New Brighton, Pa.
Manufacturers and distributors of colors for the porcelain enamel, glass, and pottery industries; clays and chemicals for the ceramic industry.

Ceramics Publishing Co., Inc. LeRoy W. Allison
421 Parker St., Newark 4, N. J.
Publishers of *Ceramic Age*, Ceramic Trade Directory, Enamel Trade Directory, and other ceramic literature.

Certain-teed Products Corp. B. E. Fennessy
120 S. La Salle St., Chicago 3, Ill.
Manufacturers of pottery plaster, Certrock, molding plaster, plaster of Paris, statuary plaster, plate-glass stucco, terra-cotta plaster, insulator plaster; also gypsum wallboard, sheathing board, and lath, wall plasters, Beaver and Kenmore boards, asphalt roll roofings, felts, cements, shingles, tarred felts, building papers, asphalt emulsions.

Champion Spark Plug Co., Ceramic Div. Frank H. Riddle
8525 Butler Ave., Detroit 11, Mich.
The Ceramic Division makes the ceramic insulators for the spark plugs which are manufactured and sold by the Champion Spark Plug Company of Toledo, Ohio.

Chattanooga Glass Co. Frank Meacham
Chattanooga 10, Tenn.
Manufacturers of glass containers for beer, patent medicine, and other proprietary products in flint and green glass.

Chicago Hardware Foundry Co. Robert J. Young
North Chicago, Ill.
Operators of ferrous and nonferrous foundries; enamel plant for enameling in both wet and dry processes on cast iron; machine shop and plating facilities. This company is engaged chiefly in jobbing work.

Chicago Pottery Co. J. S. Clifford
1920–50 Clybourn Ave., Chicago 14, Ill.
Manufacturers of all types of vitreous china plumbing fixtures consisting of all types of lavatories, closet bowls and tanks, fountains, sinks, etc., for homes, industrial plants, and institutions; also various types of vitreous china specialties.

Chicago Retort & Fire Brick Co. A. H. Taylor
208 S. La Salle St., Chicago 4, Ill.
Largest independent refractory manufacturer in Illinois producing a complete line of fire-clay refractories from Missouri and Illinois clays. Products include Anti-flux, Superior, Sterling, and Ajax brick, plastics, high-temperature cements, castables, and clays; also an Ottawa brick especially for steel-mill service.

Chicago Vitreous Enamel Product Co. William Hogenson
1427 South 55th Court, Cicero 50, Ill.
Manufacturers of porcelain enamel frits for steel and cast iron. Engineering service on new and existing porcelain enameling plants. Jobbers for International ball mills, Frantz FerroFilters, McDanel porcelain grinding balls and mill-lining brick, and a complete line of porcelain enamel shop supplies.

Chisholm, Boyd and White Co. L. W. Flood
57th and Wallace Sts., Chicago 21, Ill.
Manufacturers of brickmaking machinery.

Clark, N., & Sons G. D. Clark, Jr.
401 Pacific Ave., Alameda, Calif.
Manufacturers of handmade architectural terra cotta, ceramic veneer, ceramic glazed wall units, quarry tile, sewer pipe, drain tile, flue lining, chimney pipe, conduit pipe, chimney caps, vent caps, firebrick, septic tanks, prepared clay, modeling clay.

Claycraft Company C. Forrest Tefft
Box 866, Columbus 16, Ohio
Manufacturers of structural and industrial clay products, including ceramic glazed and unglazed facing tile, buff, gray, and red face brick, acid brick, refractory insulating brick, and floor brick; own and operate three large modern plants in Ohio.

Clayton & Lambert Mfg. Co. Charles F. Lambert
French Rd. and Madola, Detroit 5, Mich.
Manufacturers of gas-fired domestic refrigerators.

Colonial Insulator Co. R. W. Hemphill
973 Grant St., Akron 11, Ohio
Manufacturers of special electrical porcelain, porcelain forms for dipped rubber goods, and refractory tubes and plates.

Columbia Fire Brick Co. M. L. Hamaker
First National Bank Bldg., Canton, Ohio
Manufacturers of Columbia, No. 1 Savage, and Strasburg firebrick at plant in Strasburg, Ohio.

Commercial Decal, Inc. Alfred Duhrssen
East Liverpool, Ohio
Manufacturers and suppliers of ceramic decalcomania since 1902; overglaze and underglaze decal for chinaware

and semivitreous ware; special decalcomania for glassware and enamelware; open-stock patterns and exclusive designs.

Consolidated Feldspar Corp. M. J. McHugh, Jr.
1403 Trenton Trust Bldg., Trenton 8, N. J.
This company mines and grinds feldspar in several states for glass, pottery, porcelain enamel, and other ceramic products; also produces beryl, mica, amblygonite, lepidolite, and flint. The feldspar is produced by the customary mining and grinding methods and by the flotation process.

Co-Operative Enameling Co. Gordan W. Lasiter
2335 East 67th St., Cleveland, Ohio
In peacetime, this company enamels volume parts, such as stoves, tanks, refrigerators, heaters, signs, and building parts. In wartime, heat-treats war materials. Now 50% reconverted to enameling.

Coors Porcelain Co. A. Coors, Jr.
Golden, Colo.
Producers of chemical and scientific porcelain pyrometer and combustion tubes and tubes for other high-temperature uses; electrical insulators for difficult applications; special ceramic products.

Corhart Refractories Co., Inc. Fred S. Thompson
16th and Lee Sts., Louisville 10, Ky.
This company manufactures and sells electrocast refractories.

Corning Glass Works J. T. Littleton
Corning, N. Y.
Manufacturers of consumer and technical glass products, including ovenware, flameware, tumblers and tableware, lighting ware, lamp chimneys, laboratory and pharmaceutical ware, optical glass and color filters, gauge glasses, glass piping, thermometer tubing, signal ware, incandescent bulb blanks, exhaust tubing, neon tubing, fluorescent lamp tubing, radio insulators and tubes, and other electrical parts.

Corning Glass Works, Charleroi Div. Arthur W. Weber
Charleroi, Pa.
(See above)

Crane Enamelware Co. L. R. Varney
Chattanooga, Tenn.
Manufacturers of a wide range of porcelain enameled iron plumbing fixtures for use in homes, hospitals, schools, office buildings, and industrial plants, including sinks, bathtubs, lavatories, and special fixtures; also a complete line of boilers and radiators for steam and hot-water heating.

Cronin China Co. W. K. Cronin
Minerva, Ohio
Manufacturers of semiporcelain dinnerware, colored-glaze dinnerware, ovenware, and refrigerator ware.

Crooksville China Co. Guy E. Crooks
Crooksville, Ohio
Producers of a high-grade line of semivitreous dinnerware since 1902; producing now two complete shapes in Ivory Tone body with many decorations and treatments; also Pantry Bak-in ware for use in oven or refrigerator and direct table use.

Crossley Machine Co. William J. Harris
Trenton 9, N. J.
Manufacturers of a complete line of machinery for the making of general-ware pottery, sanitary pottery, electrical porcelain, high-tension insulators, crucibles, and floor and wall tile.

Crown Potteries Co. J. P. Wendt
Evansville 7, Ind.
Manufacturers of high-quality semivitreous decorated ware in plain and embossed shapes; decorations follow authentic styling, using overglazed decalcomania; advantageously located for the trade in the South, Southwest, Central, and Central West States.

Crunden Martin Mfg. Co. E. A. Schwarz
760 South 2nd St., St. Louis 2, Mo.
Manufacturers of enameled kitchen utensils, aluminum containers for small Army stoves, brass parts for Navy amphibious tanks, rocket assemblies for the Navy, galvanized tubs and pails, rubber fruit-jar rings, and various paper products.

Curtis Laboratories, Inc. T. S. Curtis
2719 Hyperion Ave., Los Angeles 27, Calif.
Since Pearl Harbor, the entire activities of this company have been confined to research and development work followed by production of critical military aviation optical instruments for the Army Air Forces, the Navy, and the Marine Corps.

Davis Fire Brick Co. D. D. Davis
Oak Hill, Ohio
Manufacturers of a complete line of all grades of fire-clay refractories in all shapes and sizes; also Sharon Brand silica brick manufactured by the hand mold and power press for open-hearth and electric furnaces, glass tanks, copper reverberatory furnaces, and coke ovens.

Demuth Glass Works, Inc., Parkersburg Div. W. R. Schlehr
Box 629, Parkersburg, W. Va.
Manufacturers of blown and pressed glassware and lamp tubing; also pressed ware to individual specifications.

Denison Engineering Co. W. C. Denison, Jr.
1160 Dublin Rd., Columbus 16, Ohio
Manufacturers of oil-hydraulic movement and power equipment; car propellers, elevators, and transfer units with HydrOILic power and exact control; extrusion cylinders and power units for them; standard and special HydrOILic presses, and the Multipress, a completely self-contained 4-ton bench-type press.

Denver Sewer Pipe & Clay Co. W. J. Geddes
Box 2329, Denver 1, Colo.
Established in 1889, manufacturers of vitrified salt-glazed sewer pipe, wall coping and conduit, clay flue lining and fireproofing blocks, firebrick and special refractories, face brick, stiff-mud common brick, salt-glazed brick and hollow building tile, common structural clay tile, and structural face tile.

DeVilbiss Company E. F. Frey
Toledo 1, Ohio
Engineers and manufacturers of complete spray finishing equipment and dry and water-wash types of spray booths and exhaust systems specially designed for ceramic and porcelain plants.

Diamond Alkali Co., Development Div. L. T. Welshans
Painesville, Ohio
Manufacturers of soda ash, caustic soda, bicarbonate of soda, liquid chlorine, carbon tetrachloride, silicate of soda, bichromate of soda, and precipitated calcium carbonates for paint, rubber, and industrial purposes; specialty cleansers for the laundry, dairy, and bottling trades.

Diamond Glass Co. J. R. Hanson
Royersford, Pa.
Manufacturers of beverage, food, pharmaceutical, and private mold products.

Dirats, J., & Co., Inc. J. Dirats
Notre Dame St., Westfield, Mass.
This company specializes in synthetic colloidal mineral and organic processes for the manufacture of abrasive, refractory, and insulating material; Dirats core binder for foundry use; completely equipped laboratories for analytical, metallurgical, spectrographic, and X-ray work.

Distillers Corporation, Ltd. Adalbert Herman
1430 Peel St., Montreal, Quebec, Canada
Producers of distilled spirits.

Dixon, Joseph, Crucible Co. H. P. Smith
Jersey City, N. J.
Producers of graphite products, including crucibles, pencils, paints, and lubricants.

Dominion Minerals, Inc. V. V. Kelsey
Piney River, Va.
Pioneer miners and refiners of aplite, a rock product consisting of silicates of aluminum, calcium, potassium, and sodium; used as a source of alumina for glass; also used in the manufacture of porcelain enamels, welding rods, and grinding wheels.

Douglas, John, Co. John F. Douglas
71st Street and B & O.R.R., Cincinnati 16, Ohio
Manufacturers of vitreous china water-closet bowls and tanks, lavatories, drinking fountains, urinals, and various hospital items.

Drakenfeld, B. F., & Co., Inc. Scott J. Courtney
45–47 Park Place, New York 7, N. Y.
Manufacturers of colors and coloring chemicals for glass, clayware, and porcelain enamels; decorating supplies; grinding and screening equipment.

Duncan & Miller Glass Co. James E. Duncan, 3rd
Washington, Pa.
Manufacturers of blown and pressed table glassware; blown tumblers and stemware; etchings; decorated novelties.

Du Pont, E. I., de Nemours & Co., Inc. S. C. Harris
Electrochemicals Dept., Wilmington, Del.
Manufacturers of a complete line of ceramic colors, including body stains, glaze stains, overglaze and underglaze colors, oxides for porcelain enamels, acid- and alkali-resistant glass colors for use on glass tableware and containers; precious metal decorations. A technically trained service staff is available for assistance in the use of these products.

Eastern Clay Products, Inc. N. J. Dunbeck
Eifort, Ohio
The largest producers of foundry bond clays in the United States, producing five different types of clay from five plants in four states; also producers of crucible and ceramic clays.

Eastman Kodak Co.
Research Library, Rochester 4, N. Y.
Manufacturers of film, sensitized paper, and photographic chemicals; cameras, projectors, and accessories; lenses, filters, and special optical equipment; synthetic fiber and a thermoplastic composition; and, during the war, precise instruments for the control of gunfire.

Edgar Plastic Kaolin Co. Albert C. Edgar
Metuchen, N. J.
Producers of a Florida kaolin that is used in all types of whiteware manufacture; very white firing and refractory, highly plastic, and strong in the dry state. A bulletin of properties and formulas is available.

Electric Auto-Lite Co., Spark Plug Div. Robert Twells
Fostoria, Ohio
Manufacturers in twenty-two plants of automotive equipment principally in the electrical, lighting, control, protection, and ornamentation fields; also automatic pilots and ammunition components. The Spark Plug Division makes principally automotive and aviation spark plugs, fabricating and assembling all components.

Electro Refractories & Alloys Corp. Grant S. Diamond
344 Delaware Ave., Buffalo 2, N. Y.
Manufacturers of Tercod crucibles for melting nonferrous metals; superrefractory linings for melting furnaces; silicon carbide slabs, posts, and other furniture for pottery kilns; high-temperature furnace cements; stopper heads for steel-pouring ladles; nonferrous alloys; resinoid grinding wheels.

Engelhard, Charles, Inc. A. W. Taber
90 Chestnut St., Newark, N. J.
Manufacturers of heat-measuring devices, including pyrometers and thermometers; gas-analysis apparatus.

English China Clays Sales Corp. D. E. Milne
551 Fifth Ave., New York 17, N. Y.
Importers and distributors of English clays for the pottery industry.

Erie Resistor Corp. Byron B. Minnium
644 West 12th St., Erie, Pa.
Manufacturers of carbon-composition resistors and radio-interference suppressors, mica and ceramic dielectric capacitors, and molded plastic parts; all for use in radar, navigation, communication, and similar electronic equipment.

Eureka Flint & Spar Co., Inc. Herreld D. Thropp
Box 266, Trenton 2, N. J.
Suppliers of Eureka glaze feldspar, Eureka body feldspar, American sand flint, English flint, rock flint, English Cornwall stone, and placing sand.

Evans Lead Corp. R. M. Evans
Box 1467, Charleston 25, W. Va.
Manufacturers of all types of red lead and litharge, fritted lead bisilicate, fritted lead monosilicate, and 300-mesh lead monosilicate. Detailed information on these products is available.

Exolon Company William A. Harty
Tonawanda, N. Y.
Manufacturers of silicon carbide (Carbolon) and fused aluminum oxide (Exolon) abrasives; also silicon carbide and fused aluminum oxide refractories in crude and ground form, graded to the requirements of the consuming industries.

Fabricá de Ladrillos Industriales y Refractarios, S. A. Salvador, Odriozola Gómez
Apartado 390, Monterrey, N. L., Mexico
Manufacturers of fire-clay brick, high heat-duty and silica brick, all standard and special shapes, refractory mortars, cast refractories, slag-lime brick, and hydrated lime; also insulating brick and assay crucibles.

Fairfacts Company, Inc. M. P. Mitchell
Box 374, Trenton 3, N. J.
Manufacturers of a line of china bathroom accessories, consisting of soap holders, toothbrush and tumbler holders, paper holders, towel bars, etc.

Federal Glass Co. Henry H. Blau
515 E. Innis Ave., Columbus 7, Ohio
Producers of glassware for domestic and hospital uses, including tumblers, tableware and kitchenware, stemware, and lighting ware in a variety of shapes, colors, and physical characteristics.

Federal Seaboard Terra Cotta Corp. O. E. Mathiasen
Perth Amboy, N. J.
Producers of architectural terra cotta; ceramic specialties; precast concrete slabs.

Fenton Art Glass Co. F. M. Fenton
Williamstown, W. Va.
Manufacturers of vases, flower bowls, candlesticks, handled baskets, vanity sets, candy boxes, and tableware in cased colors for home decoration and service; hobnail and other reproductions in peach crest, ruby overlay, rose overlay, blue overlay, cranberry, and opalescent colors.

Ferro Enamel Corp. R. A. Weaver
4150 East 56th St., Cleveland 5, Ohio
Manufacturers of Ferro frits for porcelain enamel finishes on metal products; Ferro color oxides to be used with frits;

and other enameling materials. Designers and installers of porcelain enameling furnaces and plant layouts. The Allied Engineering Division offers the same services in the pottery and clayware fields.

Ferro Enamels (Australia) Pty., Ltd. R. M. Mueller
Bourke Rd., Alexandria, N.S.W., Australia
Manufacturers of frit and porcelain enameling materials. Suppliers to this industry, with engineering service for furnaces and equipment.

Ferro Engineering Co. Walter M. Charman
1208 Hanna Bldg., Cleveland 15, Ohio
This company sells and services the C&D Hot Top and advises on steel ingot and ingot handling problems. The C&D Hot Top increases yields, safeguards quality, cuts costs, and systematizes and modernizes operations.

Ferrosmalt, S. A. Antonio Orlando
Avenida 18, Julio 1202, Montevideo, Uruguay
Producers of electrical porcelain fittings and accessories such as light sockets, switches, and couplings; in the near future, glazed tile, porcelain tableware, and other ceramic products.

Fiberglas Canada, Ltd. L. C. Powell
Oshawa, Ontario, Canada
Fiberglas is glass in fiber form used as insulating material for all types of electrical, industrial, and construction uses, as well as in original equipment.

Findlay Clay Products Co. John L. Leech
Washington, Pa.
Manufacturers of vacuum cast tank blocks, refractories, and glassmelting pots usually high in silica; high-alumina refractories including sillimanite; specialists in complicated and large shapes.

Fletcher Enamel Co. J. Carroll Fletcher
Dunbar, W. Va.
Manufacturers of a complete line of porcelain enameled kitchenware.

Foote Mineral Co. H. C. Meyer
1609 Summer St., Philadelphia 3, Pa.
Manufacturers, processors, and suppliers of barium, beryllium, cerium, lithium, manganese, strontium, zirconium chemicals, and ores; also chromite, natural iron oxides, fused silica, ground glass and porcelain, pyrites, titanium ores, and pure refractory oxides. Custom grinding service.

Fords Porcelain Works I. A. Hansen
Perth Amboy, N. J.
Manufacturers in porcelain of kitchen sinks, laundry trays, urinal stalls, bathtubs, and like items; in vitreous china of toilet bowls and tanks, lavatories, and urinal stalls.

Foster-Forbes Glass Co. F. R. Motsch
Marion, Ind.
This company and its predecessor companies since 1848 have specialized in the manufacture of quality containers in flint glass only. The major lines are toilets, cosmetics, prescription, foods, catsup, liquor, wines, beers, and beverages.

Fostoria Glass Co. W. F. Curtis
Moundsville, W. Va.
Manufacturers of handmade blown and pressed tableware and decorative glassware. Distribution is made through selected retailers in all principal cities and towns.

Franklin Glass Corp. A. L. Pasquier
Box 150, Butler, Pa.
Manufacturers of polished plate glass of largest sizes, bent glass in all sizes, structural and colored plate glass, and ground and polished spectacle glass.

Frazier-Simplex, Inc. C. E. Frazier
436 E. Beau St., Washington, Pa.
Contracting and consulting engineers specializing in the erection and operation of equipment for ceramic plants, including glass tanks, furnaces, batch plants, driers, producer-gas plants, lehrs, fuel-oil systems, and factory buildings; also designs and appraisals.

French Saxon China Co. W. V. Oliver
Sebring, Ohio
Manufacturers of dinnerware for home use in four exclusive shapes and one hundred decorations.

Fulper Pottery Co. J. M. Stangl
Trenton 4, N. J.
Manufacturers of vitrified porcelain raschig rings which are used in the chemical industry in connection with acid towers; also decorated underglaze dinnerware under the trade name Stangl Terra Rose.

Funkhouser Company E. H. Nichols
138 W. Washington St., Hagerstown, Md.
Miners and manufacturers of natural slate and stone roofing granules, treated at high temperatures with fluxing materials, frits, glazes, and coloring oxides to produce more intense colors, for use in surfacing composition roofing.

Garco Products, Inc. N. S. Garbisch
Box 351, Butler, Pa.
Manufacturers of Garspar, an intimate mixture of chemically and mechanically processed pulverized silica and glass for use in vitreous and semivitreous ware, and Garsand, a specially formed siliceous product designed for use in all types of glass batches.

Garfield Refractories Co. Kenneth A. Rugh
Bolivar, Pa.
Manufacturers of Acme, Garfield, Garnite, IXL, and Walbro firebrick; Corstex superduty firebrick; and Balgar 50% alumina and Balgar 60% alumina refractories.

Gayner Glass Works John M. Gayner
Salem, N. J.
Manufacturers of a general line of machine-made bottles in flint glass (medicinal, pharmaceutical, food, and general purpose). Also specialists in large ware, including carboys, acid containers, and battery jars and covers.

General Ceramics Co. Fred A. Whitaker
Keasbey, N. J.
The Chemical Equipment Division of this company manufactures stoneware and porcelain equipment for the chemical industry and provides engineering service for the design and construction of plants. The Steatite Division manufactures insulators for the electronics industry, and the Carillon Ceramics Corporation, a subsidiary, manufactures sanitary porcelain and vitreous china.

General Color & Chemical Co. Harry J. Keener
Sebring, Ohio
Distributors of potter's colors and frits.

General Electric Co., Pitney Glass Works W. S. Kahlson
Nela Park, Cleveland, Ohio
Manufacturers of glass bulbs, clear and inside frosted, for incandescent lamps and electronic tubes; tubing for lamp and tube parts, lumiline and fluorescent lamps; glass parts for sealed-beam lamps; opaque and clear quartz tubing and cane.

General Refractories Co. Russell P. Heuer
1600 Real Estate Trust Bldg., Philadelphia 7, Pa.
Manufacturers of refractories with twenty-two plants operating in ten states; products include fire-clay, silica, magnesite, and chrome brick and acid, neutral, and basic bulk refractories; offices in all large cities.

George, W. S., Pottery Co. W. S. George
East Palestine, Ohio
Manufacturers of plain and fancy dinnerware in white, canarytone, and colored glazes; monogram sets with black, blue, and green initials. Plants in East Palestine, Ohio, and Canonsburg, Pa.

Georgia Kaolin Co. Wharton Jackson
433 N. Broad St., Elizabeth 3, N. J.
Producers of clay for the ceramic industry since 1901 at Dry Branch, Ga. One of the first American kaolins to successfully replace imported china clays. Pioneer washed clay is widely used in whiteware and in special refractories.

Gillinder Brothers, Inc. J. Fletcher Gillinder
Port Jervis, N. Y.
Normally manufacturers of all glass forms designed to collect, distribute, direct, refract, reflect, and/or diffuse light from any electrical source; instrument covers; kitchen mixing sets; specialties of crystal, opal, translucent, and colored glassware; for the war, spectrophotometrically controlled colored glass.

Gladding, McBean & Co. F. A. Walsh
Lincoln, Placer County, Calif.
Manufacturers of ceramic products of every description ranging from fine dinnerware to heavy clay structural products.

Gleason-Tiebout Glass Co. C. H. Tiebout
59 54th St., Maspeth, N. Y.
Manufacturers of glass globes, balls, bowls, cylinders, and shades in many qualities, colors, and textures for lighting equipment for highways and buildings; war manufacturers of Fresnel lenses for the Navy and glass for Army camps, hospitals, and administration buildings.

Glenboig Union Fireclay Co., Ltd. Alexander McKendrick
The Laboratory, Star Works, Glenboig, Lanarkshire, Scotland
Manufacturers of high-grade firebrick, refractory cements, etc.; firebrick brands: 42% Al_2O_3 Glenboig Special, 38% Al_2O_3 Glenboig, and 34% Al_2O_3 Gem.

Glenshaw Glass Co., Inc. George W. Meyer
Glenshaw, Pa.
Manufacturers of glass containers for beer, liquors, and wines; packers; preservers; narrow-neck and wide-mouth bottles.

Globe Brick Co. S. C. Porter
East Liverpool, Ohio
Manufacturers of firebrick, ladle brick, and producers of fire clay.

Goldscheider Everlast Corp. W. F. Goldscheider
280 Third St., Trenton 10, N. J.
Manufacturers of china figurines, animals, madonnas, and hand-painted pottery; showroom at 225 Fifth Ave., New York, N. Y.

Great Lakes Foundry Sand Co. C. L. Cruikshank
720 United Artists Bldg., Detroit, Mich.
Exclusive sales agents for the American Nepheline Corporation, miners and processors of Lakefield nepheline syenite, used as a flux in pottery or as a source of aluminum oxide in glass and enamel. Other products include placing sand, fire clay, flint, bentonite, and prepared low-temperature bodies.

Great Lakes Steel Corp. Conrad W. Given
Ecorse, Detroit 18, Mich.
A Division of the National Steel Corporation, makers of Michigan Metal, widely used in many products as a base for porcelain enamel.

Green, A. P., Fire Brick Co. R. S. Bradley
Research Dept., Mexico, Mo.
Manufacturers of a complete line of fire-clay brick, including high alumina, super duty, high heat duty, and intermediate duty; refractory specialties including mortars, plastics, castables, coatings, and industrial insulation; also insulating firebrick.

Grindley Artware Mfg. Co. A. K. Grindley
Box 166, Sebring, Ohio
Manufacturers of china figurines, animals, and statuary.

Haeger Potteries, Inc. E. H. Haeger
Dundee, Ill.
Manufacturers of a line of flower bowls, vases, fruit bowls, and figurines; a large number of planter items for florist use; war work equipping barracks and officers' quarters.

Hall China Co. M. W. Thompson
East Liverpool, Ohio
Manufacturers of a complete line of plain and decorated teapots, casseroles, bowl sets, and other cooking and serving porcelain articles; also a small line of decorated semi-vitreous dinnerware and soda-fountain jars.

Hamilton Potteries, Ltd. H. Redshaw
100 Locke St., S., Hamilton, Ontario, Canada
Specialists in the manufacture of dry-press electrical porcelains for wiring devices, pole line insulators, transformer bushings; refractory plates and element holders for heating units; other special pieces to customers' specifications.

Hampden Grinding Wheel Co. G. S. Emerson
118 Fisk Ave., Springfield 7, Mass.
Incorporated in 1886 under the name of the Hampden Corundum Wheel Company; now specialists in the manufacture of grinding wheels used largely in the heavy goods industry.

Hancock Brick & Tile Co. J. Leo Child
Findlay, Ohio
Manufacturers of common brick and drain tile.

Hanley Company J. Clair Peck
Summerville Pa.
Operators of modern tunnel-kiln plants at Summerville and Lewis Run, Pa., producing buff, gray, and red face brick, face tile, glazed brick and tile, quarry tile, acid brick, and floor brick.

Hanovia Chemical & Mfg. Co. W. Riehl
Chestnut St. and N.J.R.R. Ave., Newark 5, N. J.
Producers of bright and burnished gold, platinum, palladium, and silver in liquid, paste, and powder form and luster colors and stains for decorating pottery and glass; also ceramic precious metal coatings for current-carrying purposes and hermetic sealing.

Harbison-Walker Refractories Co. Kenneth Seaver
1800 Farmers Bank Bldg., Pittsburgh 22, Pa.
Producers of fire-clay, superduty fire-clay, high-alumina, silica, magnesite, chrome, and forsterite brick, acidproof brick, insulating firebrick and bulk insulation, fire clays, silica clays, special furnace chrome, furnace magnesite, dead-burned grain magnesite, high-temperature bonding mortars, ramming mixtures, plastic firebrick, and castables.

Hardinge Co., Inc. Harlowe Hardinge
York, Pa.
Manufacturers of conical or cylindrical ball or pebble mills; tube, rod, batch ball, and pebble mills; driers; rotary kilns; air classifiers for ball and pebble mills; wet classifiers; agitators; thickeners; constant-weight volumetric feeders; scrubbers; rotary tubular conveyers; diaphragm sludge pumps; and Electric Ear for automatic mill-feed control.

Harker Pottery Co. Robert E. Boyce
East Liverpool, Ohio
Continuously in business since 1840, this company now produces decorated dinnerware, ovenware, and juvenile goods at its plant located at Chester, W. Va. Post office address, East Liverpool, Ohio.

Harshaw Chemical Co. D. G. Pierce
1945 East 97th St., Cleveland, Ohio
Producers and distributors of chemicals and colors for all branches of the ceramic industry.

Hartford-Empire Co. F. Goodwin Smith
Box 1620, Hartford 1, Conn.
The inventions, developments, equipment, and engineering service of this company have long been an important fac-

tor in improving the quality and lowering the cost of glassware. Its automatic feeders, forming machines, stackers, and lehrs are widely used.

Haviland, Theodore, & Co., Inc. Theodore Haviland II
26 West 23rd St., New York 10, N. Y.
Manufacturers and distributors of fine American dinnerware.

Haws Refractories Company E. E. Slick, Sr.
2128 Farmers Bank Bldg., Pittsburgh 22, Pa.
Manufacturers of firebrick, foundry refractories, hot tops, and silica refractories.

Hazel-Atlas Glass Co. Francis C. Flint
319 S. Main St., Washington, Pa.
Manufacturers of packers', preservers', and druggists' ware, fruit jars and caps, jelly glasses, tableware, tumblers, decorated ware, and metal closures.

Heisey, A. H., & Co. T. C. Heisey
Newark, Ohio
Manufacturers of rock crystal stemware, etched ware, fine table glassware, candlesticks and candelabras, figurines and sculptured glass, all-glass cocktail shakers; everything for the table and home.

Higman, John W., Co. Robert J. Stone
24 State St., New York 4, N. Y.
Importers of English china clays and English ball clays for all branches of the ceramic and paper industries. Manufacturers of Superundum silicon carbide and Oxalum aluminum oxide for the refractory and abrasive industries; also Hitex grinding cubes and mill-lining blocks.

Holophane Co., Inc. Charles Franck
342 Madison Ave., New York 17, N. Y.
Manufacturers of scientific lighting equipment for commercial, industrial, institutional, and street installations, utilizing pressed prismatic glass to provide control, affording efficient operation with no permanent depreciation; commercial and research departments for service to customers.

Home Aid Construction Co. H. K. Brown
527 Society for Savings Bldg., Cleveland 14, Ohio
Specialists in tile work for home modernization and repair, basement waterproofing, cement drives and walks, rebuilding of home interiors, installation of attic rooms and recreation rooms, and industrial heavy-duty mastic floors.

Hommel, O., Co. E. M. Hommel
209 4th Ave., Pittsburgh 30, Pa.
Producers of colors and oxides for all branches of the ceramic industry; clays; pottery frit and porcelain enamel frit of all types; chemicals; supplies and equipment; decorating supplies; and powdered metals.

Houze, L. J., Convex Glass Co. Roger J. Houze
Point Marion, Pa.
Manufacturers of micoquille and coquille goggle lenses and bent blanks; microscopic cover glass; welding glass; flashed sheet glass for X-ray and radar equipment; colored sheet glass for filters and signal equipment; aviation compass bowls and mirror blanks; Fresnel lenses; pressed-glass specialties; lamp parts; and convex glass shapes.

Hull, A. E., Pottery Co., Inc. Gerald F. Watts
Crooksville, Ohio
Producers of art pottery and kitchenware, the latter having been withdrawn from display until more definite shipping dates can be offered; all other ware now on an allocated basis. New conceptions are ready for the postwar market.

Ideal Tooth, Inc. Martin Myerson
90 Hamilton St., Cambridge 39, Mass.
Incorporated in 1917, this company manufactures artificial teeth which are used by civilians and the armed forces all over the world.

Illinois Clay Products Co. O. L. Jones
214 Barber Bldg., Joliet, Ill.
Producers of Goose Lake plastic fire clays and firebrick and Therm-O-Flake high-temperature insulation products; specialists in bond clays for foundry requirements.

Illinois Water Treatment Co. W. S. Morrison
Rockford, Ill.
Manufacturers of water-treatment equipment of the resinous ion-exchange type by which hard water for ceramic purposes is rendered pure and free of dissolved solids.

Imperial Glass Corp. C. J. Uhrmann
Bellaire, Ohio
Established in 1903, this company manufactures the nationally famous handmade Candlewick and Cape Cod crystal tableware; continuous, day-tank, and pot melting; 650 employees; nationwide and export trade; progressive postwar plans ready for action.

Indiana Glass Company Charles L. Gaunt
Dunkirk, Ind.
Makers of a line of machine- and hand-made tableware, together with lenses for tanks and jeeps, including ruby; vaporproof globes; soda-fountain items; and, in normal times, refrigerator trays, automobile lenses, and mixing bowls; all pressed-glassware items.

Industrial Ceramic Products, Inc. W. E. Cramer
965 W. Fifth Ave., Columbus 8, Ohio
Manufacturers of pins, stilts, cone plaques, and specialties; pins are made by improved patented process which insures solid, clean, and proper contact points.

Industrial Filter Sack Co. Hugh Nile
Wellsville Ohio
Manufacturers of filter sacks, industrial aprons, and clay covers.

Ingram-Richardson Mfg. Co. of Indiana, Inc. C. P. Scripture
Frankfort, Ind.
Peacetime activities: manufacturers of Porcelfrits and Porceliron table tops, sink tops, sink bowls, stove parts, chimney flues, and specialties; wartime activities: fabrication and assembly of aircraft parts and fabrication and heat-treating of armor plate.

Inland Fire Brick Co. George S. Davies
3120 Berea Rd. at Elmwood Ave., Cleveland 11, Ohio
Producers of fire clay under the names Inland Blue and Pierpont, high-temperature mortars under Brix trademarks, and plastics.

International Clay Machinery Co. R. H. McElroy
1145 Bolander Ave., Dayton 1, Ohio
Manufacturers of Vac-Aire pottery pug mills and heavy clay product extrusion machines; laboratory Vac-Aire experimental machines; complete clayworking equipment for brick, tile, and pottery, including kiln cars.

International Smelting & Refining Co. W. M. Weathers
577 Malvern Rd., Akron 3, Ohio
Manufacturers of all grades of zinc oxide and white lead carbonate; special grades of white lead carbonate for the ceramic industry.

Ironton Fire Brick Co. E. F. Myers
707 Carolina Life Bldg., Box 1324, Columbia, S. C.
This company has served the metallurgical, chemical, coke, and glass industries, as well as a number of railroads, for more than twenty-five years with high-quality Kentucky clay refractories; also refractory cements, plastic refractories, and siliceous ramming refractories; general offices, Ironton, Ohio.

Isolantite, Inc. George W. Hawkins
343 Cortlandt St., Belleville 9, N. J.
Producers of a wide variety of steatite insulators extensively used in the radio, radar, communications, and electrical industries; also, in their Radio Specialties Depart-

ment, complete antenna assemblies, feed systems, and coaxial cable.

Johns-Manville Sales Corp. J. C. Crawford, Jr.
22 East 40th St., New York 16, N. Y.
Producers of insulating firebrick, refractory products, insulating blocks, and pipe covering; other insulating materials for all temperatures and service conditions; building materials; packings; friction materials; Transite pipe; fillers; and filter aids. Services of contracting organizations are available to apply insulation.

Johnson Glass Co. William Garland
5248 Elston Ave., Chicago 30, Ill.
Manufacturers of lenses for signal and warning equipment, pilot lights, and switchboards; reflector lenses for trucks and busses; head-lamp, tail-lamp, and clearance-lamp lenses; private mold work in pressed glass of all colors.

Jones Metal Products Co. Frank E. Jones
West Lafayette, Ohio
Manufacturers of porcelain enameled kitchenware and hospital ware.

Jova Brick Works J. L. Jova
Roseton, N. Y.
Producers of common brick.

Kentucky Clay Mining Co. W. J. Watkins
Mayfield, Ky.
Suppliers for the past twenty-five years of ball clays, sagger clays, and wad clays to leading plants in the United States, Canada, and Mexico; ceramic engineer available for consultation.

Kentucky-Tennessee Clay Co., Inc. R. C. Meeker
807 City Savings Bldg., Alliance, Ohio
Miners and shippers of ball, sagger, wad, enamel, and plastic fire clays; numerous grades are produced from mines in West Kentucky, West Tennessee, and Mississippi; available in lump, disintegrated, and air-floated form.

Kerr, Alexander H., & Co., Inc. C. H. Hubbard
Sand Springs, Okla.
Plants at Huntington, W. Va., Sand Springs, Okla., and Santa Ana, Calif., manufacture fruit jars, jelly glasses, and home-canning closures; also packers' ware.

Kimble Glass Co. M. A. Eddy
Vineland, N. J.
Manufacturers of glass containers for chemical, dairy, clinical, and pharmaceutical use; laboratory glassware; rods; tubing.

Knight, Maurice A. M. A. Knight, Jr.
Box 111, Akron 9, Ohio
Acidproof chemical equipment manufactured exclusively, including a full line of chemical stoneware pieces such as piping, valves, acid jars, and functional units designed and built with proper materials; pickling tanks, acid concentrators, and obnoxious-fume absorbers; also several synthetic resins to conserve critical materials.

Knowles, Edwin M., China Co. J. W. Hepplewhite
Newell, W. Va.
Manufacturers of semivitreous dinnerware and cooking ware in six different shapes, both in white and colored glazes and decorated patterns; cooking ware is known as Knowles Utility Ware.

Knox Glass Associates, Inc. R. R. Underwood
Knox, Pa.
Suppliers of glass containers in amber and flint glass in all sizes up to and including gallons; affiliated manufacturing plants are located at Knox, Marienville, Oil City, Parkers Landing, Sheffield, and Pittsburgh, Pa.; Lincoln, Ill.; Jersey City, N. J.; Jackson, Miss.; and Palestine, Tex.

Knox Glass Bottle Co. J. H. Levis
Knox, Pa.
Manufacturers of a complete line of glass containers in the Knox organization, with this particular plant specializing in bleach bottles and beverage and liquor bottles.

Kohler Company Carl J. Kohler
Kohler, Wis.
Manufacturers of cast-iron plumbing ware, vitreous china plumbing ware, closet seats, brass plumbing fittings, and electric generating sets.

Kolene Corporation J. H. Shoemaker
315 Boulevard Bldg., Detroit 2, Mich.
Suppliers of a process for preparing ferrous metals for applying ceramic coatings; one process for rolled stock, another for scaled, rusted, or cast stock; fewer operations and less space are required than for conventional cleaning operations.

Kopp Glass, Inc. C. E. Leberknight
Box 8255, Swissvale, Pittsburgh 18, Pa.
Producers of hand-pressed and blown ware to customer specifications; glass for railroad, traffic, and military signaling devices; heat-resisting and colored glassware for floodlighting and airplane and airport equipment; visible absorbing ultraviolet and infrared transmitting glasses; special items for stage and display lighting.

Koppers Co., Inc., Research Div. Carl D. Ulmer
945 Koppers Bldg., Pittsburgh 19, Pa.
Designers, builders, and operators of byproduct-coke and gas plants; producers of coke, gas, ammonium sulfate, pyridine, naphthalene, benzene, toluene, xylenes, solvent naphtha, phenol and other tar acids and bases, creosote oil, fungicidal sulfur, paving tar, pitches, and tar-base paints; piston rings and airplane propellers; wood preservatives, poles, and ties.

Kraftile Company C. W. Kraft
Niles, Calif.
Manufacturers of structural clay products and acid brick; distributors in the West of special construction products. "Kraftile for special construction problems."

Laclede-Christy Clay Products Co. W. F. Godejohn
1711 Ambassador Bldg., St. Louis 1, Mo.
Founded in 1844, manufacturers of a complete line of fireclay refractories, including firebrick, special shapes, glasshouse refractories, arch and wall tile, refractory specialties, and vitrified clay products.

Lancaster Iron Works, Inc. Frank A. Fix
Lancaster, Pa.
Manufacturers of Lancaster counter-current rapid batch mixers and the Arnold-Creager and Martin line of brick-making machinery; plate and pipe work; refining equipment, asphalt plants, rotary kilns and driers, furnaces, industrial waste treatment plants and concrete forms. Fabricating, foundry, and machine-shop facilities.

Lancaster Lens Company H. G. Crumbaker
220-226 W. Main St., Lancaster, Ohio
Manufacturers of pressed, blown, and bent glassware in crystal and colors; semiprecision optical lenses and technical glass parts; reflectors for floodlights; automobile, aviation, and railway glassware.

Lapp Insulator Co., Inc. K. E. Stettinius
Le Roy, N. Y.
Manufacturers of vitreous porcelains for power transmission, radio, electronic, and chemical industries; complete associated assemblies; feldspathic and steatite ceramics and others especially compounded for the intended application.

Latchford-Marble Glass Co. Baird Marble
Box 4707, Florence Branch, Los Angeles 1, Calif.
Manufacturers of glass jars and bottles for all purposes from 4-oz. to gallon capacity, inclusive; made in flint, green, and amber colors.

Laughlin, Homer, China Co. Joseph Wells
Newell, W. Va.
Manufacturers of Fiesta, Harlequin, and Riviera ware in colored glazes; Fiesta Kitchen Kraft and decorated Kitchen Kraft cooking ware; eggshell semivitreous chinaware in the regular dinnerware lines.

Laurens Glass Works, Inc. E. D. Easterby
Laurens, S. C.
Manufacturers of glass containers for the food and beverage industries.

Lava Crucible Co. of Pittsburgh Furman South, Jr.
627 Wabash Bldg., Pittsburgh 22, Pa.
Manufacturers of crucibles of graphite and of the crystalline refractories, such as silicon carbide, aluminum oxide, zirconium silicate, and mullite; refractory shapes for furnaces; high-temperature cements.

Lee Clay Products Co., Inc. Martin S Bowne
Clearfield, Ky.
Manufacturers of the usual line of sewer-pipe products; also firebrick and drain tile. Shippers of high-alumina clay for the manufacture of aluminum sulfate and flint clay for firebrick.

Libbey Glass, Div. of Owens-Illinois Glass Co. H. R. Black
Toledo 1, Ohio
Manufacturers of handmade and machine-made tumblers, stemware, and other table glassware, including plain, etched, and color decorated; also lead, lime, and borosilicate glass for industrial use, including bulbs and tubing.

Libbey-Owens-Ford Glass Co. George B. Watkins
1701 E. Broadway, Toledo, Ohio
One of the world's largest manufacturers of flat glass, including Thermopane insulating glass, Vitrolite structural glass, Tuf-flex tempered, plate, window, heat-absorbing, bullet-resisting, and automobile and aircraft safety glasses.

Liberty Glass Company George F. Collins, Jr.
317 E. Lee, Sapulpa, Okla.
Producers of milk and beverage bottles.

Lisk Manufacturing Co., Ltd. Ashley F. Wilson, Jr.
Canandaigua, N. Y.
Manufacturers of a complete line of porcelain enameled kitchen utensils, galvanized ware, household and dairy tinware, poultry supplies, and decorated metalware.

Locke Insulator Corp. J. M. Gilfillan
Box A, Baltimore, Md.
Manufacturers and distributors of "clayramics" for electrical, thermal, mechanical, and chemical applications; power insulators, hardware, and associated materials; radio and electronic insulators; telephone and telegraph insulators; chemical porcelain and pipe; mill balls and linings; special "clayramic" bodies and designs.

Louisville Fire Brick Works, Inc. Louis Ernst
4554 Louisville Ave., Louisville 9, Ky.
Manufacturers of a complete line of refractories using the famous Carter County, Ky., clays; producing plants located at Louisville, Ky., and Grahn, Carter County, Ky.

Louthan Manufacturing Co. William B. Louthan
East Liverpool, Ohio
Manufacturers of steatite, refractory, and electrical porcelain as follows: gas backwalls and radiants; electrical-appliance porcelain; steatite resistor tubes; steatite pressed parts; pins, stilts, firing racks, and setters.

Lynch, A. J., & Co. W. W. Cadwallader
2424–30 Enterprise St., Los Angeles 21, Calif.
Sales representatives in California to the ceramic industry of the products of such firms as the New Jersey Zinc Sales Co. (zinc oxide), the Anaconda Sales Co. (dry white lead), and the Harshaw Chemical Co. (colors, ceramic chemicals, etc.).

Mallinger, Samuel, Co. Benjamin Mallinger
1855 Forbes St., Pittsburgh 19, Pa.
Distributors of glass containers for the medicinal trade.

Mansfield Sanitary Pottery, Inc. H. A. Hoare
Perrysville, Ohio
Manufacturers of vitreous china plumbing fixtures and specialties.

Marienville Glass Co. Clarence R. Deible
Marienville, Pa.
A Pennsylvania corporation organized in 1914; a manufacturing unit of Knox Glass Associates, Inc.; manufacturers of flint- and amber-glass containers varying in capacity from a fractional ounce to one gallon; also flint pressed ware.

Marshall-Eclipse Div. of Bendix Aviation Corp. F. Weyburne
Box 538, Troy, N. Y.
Manufacturers of brake lining.

Maryland Glass Corp. L. C. Roche
2143 Wicomico St., Baltimore 30, Md.
Manufacturers of blue and flint-glass containers for the perfume, pharmaceutical, and food-packing industries; all operations are fully automatic.

Mason City Brick & Tile Co. R. F. Grady, Jr.
Mason City, Iowa
Manufacturers of structural clay tile, including smooth and textured face tile, backup, partition, and floor tile; radial chimney brick; common brick; face brick; 2- by 12-inch drain tile; silo tile; and mortar mix.

Maxson, Elwyn L. Elwyn L. Maxson
1526 Canada Blvd., Glendale, Calif.
Distributors of pottery clays; ceramic colors; slabs, setters, and saggers; standard pyrometric cones; Frantz FerroFilters; Lakefield nepheline syenite.

McFeely Brick Company R. R. Hendren
816 Ligonier St., Latrobe, Pa.
Manufacturers of high-quality silica brick. In serving the steel industry for more than forty years, Vulcan brick has established many records and a reputation for dependable refractory service.

McHose, L. H., Inc. M. M. McHose
Box 345, Perth Amboy, N. J.
For more than 100 years L. H. McHose and the Such Clay Co. have produced crude and washed ball clays, terra cotta, fire clays, and sagger clays; special sagger mixture for high and low temperatures; research laboratory and engineering department.

McKee Glass Co. Gerald Terrill
Jeannette, Pa.
Manufacturers of heat-resisting Glasbake ovenware, Range-tec top-of-the-stove ware, kitchenware, tableware, automobile lenses, chemical glassware, and special mold work.

McKee, Arthur G., & Co. J. P. Irwin
2300 Chester Ave., Cleveland 1, Ohio
Designers and constructors of beneficiation plants for treating iron ore; blast-furnace plants; steel plants; oil refineries for the manufacture of all forms of petroleum products; consulting work; investigations of manufacturing facilities and operations in the iron and steel and petroleum-refining industries.

McLain Fire Brick Co. W. A. Turner
1239 Gulf Bldg., Pittsburgh 19, Pa.
Manufacturers of quality refractories. Specialists in pouring-pit refractories, including Dando dry-press and Champion wire-cut ladle brick, McLain refractory hot top, sleeves, nozzles, runners, refractory ingot-mold plugs, and fire clay.

McLeod & Henry Co., Inc. Edward J. Molloy
357 First St., Troy, N. Y.
Producers of boiler and industrial furnace refractories, including Steel Mixture brand fire-clay refractories, Carbex silicon carbide superrefractories, and Hyex Missouri superduty fire-clay refractories; established 1825; branch offices, New York and Boston.

Medalta Sales B. C. Reg'd. B. A. Cunliffe
29 W. Pender St., Vancouver, British Columbia, Canada
Manufacturers of stoneware, yellowware, artware, and heavy white tableware for commissary and hotel use.

Metal & Thermit Corporation George C. Betz
120 Broadway, New York 5, N. Y.
Manufacturers of a complete line of ceramic opacifiers, including sodium antimonate, antimony oxide, and milled zircon for enamels and tin oxide and Ultrox for use in ceramic glazes; laboratory staff available for consultation in the use of opacifiers.

Metalloy Corporation Walter M. Fenton
1320 Rand Tower, Minneapolis 2, Minn.
Specialists in lithium salts, this company produces on a large scale at its Minneapolis plant. Ores are obtained from own deposit in the nearby Black Hills; salts now in production are lithium carbonate, chloride, fluoride, and hydroxide.

Mexicana de Refractarios A. P. Green, S. A., Cía Jan O. Knizek
Av. Ferrocarriles Nacionales 200 APDO, Postal 1402, Mexico, D. F., Mexico
This company was founded recently, and the plant is now under construction. It will produce a complete line of refractories from high heat-duty to the 80% alumina quality.

Mexicana de Tubos de Albañal, S. A., Cía. Jan O. Knizek
Av. Ferrocarriles Nacionales 200, Mexico, D. F., Mexico
Mexico's largest clay product plant producing firebrick, insulating firebrick, and high-temperature bonding mortars; also sewer pipe, face brick, and roofing tile; three oil-fired tunnel kilns with monthly output of about 5000 long tons.

Mexico Refractories Co. C. A. Smith
Mexico, Mo.
Producers of a complete line of high-quality Missouri refractories: high-alumina, superduty, high heat-duty, and intermediate heat-duty firebrick; insulating firebrick; high-temperature bonding mortars, cements, castables, and coating materials; plastic firebrick; insulating firebrick cements; silica-base cements and chrome-base cements.

Mississippi Glass Co. R. D. Humphreys
200 Fifth Ave., New York 10, N. Y.
Manufacturers of flat glass.

Mitchell Clay Mfg. Co. W. F. Knoesel
5627 Manchester Ave., St. Louis 10, Mo.
Manufacturers of firebrick, glass-tank blocks, foundry refractories, and refractory materials.

Moler Products, Ltd., Hythe Works W. J. Shaw
Colchester, Essex, England
Manufacturers of Fosalsil heat-insulating materials, a range of diatomaceous earth products for temperatures up to 900°C.; "1100" insulating refractories for intermediate temperatures; also brick, slabs, aggregates, and powders.

Moore Enameling & Mfg. Co. Walter B. Moore
West Lafayette, Ohio
Before the war, producers of porcelain enameled cooking utensils, including the exclusive Marblart line. Engineering and fine precision work on war materials have developed a new line, Porcelanart utensils, produced by hydraulic extrusion, with scientifically designed bottoms for high heat conductivity and low fuel requirements; method patented.

Moore & Munger Murray Rushmore
33 Rector St., New York 6, N. Y.
Since 1892 importers of china clay from Cornwall, England, and ball clay from pits in Devonshire, produced largely by the same families; also special clays from Georgia for the ceramic industry, produced uninterruptedly since 1897.

Morton Pottery Co. William Rapp
Morton, Ill.
Manufacturers of art pottery and decorative specialties.

Mosaic Tile Co. H. D. Ayers
Zanesville, Ohio
Manufacturers of glazed wall tile and glazed and unglazed floor tile for architectural and decorative purposes; at the present time furnishing tile for Government hospitals, ships, and for many civilian uses.

Mount Clemens Pottery Co. C. E. Doll
Mount Clemens, Mich.
Dinnerware manufacturers.

Mullite Refractories Co. Charles W. Fyfe
Shelton, Conn.
Manufacturers of superrefractories, special shapes, standard brick, and cements of calcined Indian kyanite. These materials are used extensively in high-temperature applications where a high softening point, good spalling resistance, and good strength under load are required.

National Ceramic Company Nicholas H. Snyder
400 Southard St., Trenton 2, N. J.
Manufacturers of electrical porcelain specialties and bathroom fixtures.

National Engineering Co. F. W. Fuller
549 W. Washington Blvd., Chicago 6, Ill.
Manufacturers of the Simpson intensive mixer and auxiliary equipment. The Simpson mixer is a muller-type mixing device and is widely used in dry- and wet-mixing processes in every branch of the ceramic industry, particularly electrical porcelain, tile, pottery, and refractories.

National Fireproofing Corp. R. A. Shipley
202 E. Ohio St., N.S., Pittsburgh 12, Pa.
Manufacturers of structural clay products such as facing tile, buff and red load-bearing tile, silo and bin tile, underdrain blocks, electrical conduit, flue lining, chimney block, partition and flat-arch floor tile, column and girder covering tile, red face and common brick, backup tile; also pouring-pit refractories, stove liners, and refractory brick.

National Gypsum Co. J. Fred Chambers
Luckey, Ohio
The four lime plants of this company furnish the glass industry with high-calcium and dolomitic lime in the form of ground limestone, ground burnt lime, and hydrated lime; ground limestone flour, iron oxide content 0.02%; dolomite flour; hard gypsum plaster (Kalrok) for patterns, blocks, and cases; pottery plaster; slag with high alumina content.

National Industrial Sand Assn. V. P. Ahearn
951 Munsey Bldg., Washington, D. C.
A national association of the producers of sand for industrial purposes.

National Lead Company Alexander Stewart
105 York St., Brooklyn 1, N. Y.
Producers of a full line of lead products for the ceramic industry; litharge, red lead, white lead, and lead silicate frits (monosilicate and bisilicate) for glass, raw glazes, and glaze and enamel frits.

National Lime and Stone Co. L. G. Love
First National Bldg., Findlay, Ohio
Large producers at Carey, Ohio, of high-quality burned dolomitic lime and raw dolomite for glass manufacturing and dolomitic hydrated lime for neutralizing acid wastes. Plants located on three railroads which provide excellent shipping facilities.

National Refractories Co., Inc. R. A. Hitchins
1520 Locust St., Philadelphia 2, Pa.
Manufacturers of fire-clay brick and specialty refractory products at a subsidiary, the Big Savage Refractories Corp., Frostburg, Md., and silica brick at Van Dyke, Pa. Sales agents for products of the Mexico Refractories Co. and other brick manufacturers.

National Sales Corp. Frank Koch
31–35 E. Thirteenth St., Cincinnati 10, Ohio
Manufacturers of filter-press cloths for the ceramic and chemical industry; distributors of pulverized and lump Georgia kaolin, quartzite grinding cubes and mill liners, and bentonite.

National Sanitary Co. L. A. Bateman
Salem, Ohio
Manufacturers of cast-iron enameled plumbing fixtures.

Newbold General Refractories, Ltd.
Box 3407 R, Sydney, N.S.W., Australia

New Castle Refractories Co. R. W. Rowland
New Castle, Pa.
Manufacturers in four plants of saggers for the vitreous and semivitreous field and setters for floor and wall tile; hot tops for use in steel open-hearth pouring operations; fire-clay and clay refractories for industrial furnaces and special refractories of silicon carbide, sillimanite, and mullite.

New Jersey Porcelain Co. Stephen Wenczel
Box 908, Trenton 5, N. J.
Manufacturers of low-voltage electrical porcelain used in war equipment on high priority only.

Nonporite Proprietary, Ltd. Norman Griffiths
292–296 Burwood Rd., Hawthorne E. 2,
Victoria, Australia

North American Refractories Co. E. M. Weinfurtner
National City Bank Bldg., Cleveland 14, Ohio
Manufacturers of all types of fire-clay and silica refractories, including high-alumina and insulating firebrick; also a complete series of mortars, plastics, ramming mixes, castable refractories, and raw and calcined fire clay and ganister rock.

North Carolina Feldspar Corp. W. F. Deneen
Erwin, Tenn.
Miners and grinders of feldspar for the ceramic industry either of the high-potash or the high-soda variety in any desired mesh; also serve glass plants with any mesh or quality.

North State Pyrophyllite Co., Inc. E. M. Harvey
Pomona, N. C.
Miners and grinders of pyrophyllite for refractories; furnished in 6-mesh and 1/4-inch sizes.

Northwestern Glass Company Edward S. Campbell
5801 E. Marginal Way, Seattle 4, Wash.
Manufacturers of a complete line of jars and bottles in flint and amber glass for foods, beverages, and general purposes; facilities under construction for two-color operations.

Norton Company Arthur T. Malm
Worcester 6, Mass.
Producers of grinding wheels and abrasive products; manufacturers of precision grinding and lapping machines and special refractories for use at high temperatures; refractory laboratory ware and porous media for commercial processes involving aeration and filtration.

Oak Hill Fire Brick Co. M. E. Davis
Oak Hill, Ohio
Manufacturers of firebrick and producers of fire clay.

Ohio Brass Co., Barberton Division J. J. Taylor
Barberton, Ohio
Manufacturers of porcelain insulators for high-voltage power transmission and insulating components for the Bureau of Ships and Army Signal Corps for use in communications; also special nonmetallic items for Army Ordnance.

Ohio Clay Co. George W. Denison
Box 1776, Cleveland, Ohio
Manufacturers of common and facing brick.

Ohio Hydrate & Supply Co. A. H. Nieman
Woodville, Ohio
Producers of dolomitic lump, ground burnt (minus 16-mesh), granular, regular hydrate, and superfine hydrated (99.5% minus 300-mesh) lime products; filler dust or carbonate whiting, testing 99.5% minus 325-mesh; granular limestone carbonates, 10- by 30-mesh and 16- by 120-mesh.

Old Hickory Clay Company L. F. Powell
Box 271, Paducah, Ky.
Miners and shippers of high-quality Kentucky ball, sagger, and plastic fire clays furnished in crude and air-floated form according to specifications.

Onondaga Pottery Co. B. E. Salisbury
1858 W. Fayette St., Syracuse 4, N. Y.
Manufacturers of Syracuse china, a thoroughly vitrified, nonabsorbent ware used in public eating places and homes, in decorated, plain-tinted, and white; war work for the Army and Navy.

Orefraction, Inc. Norbert F. Stanny
7505 Meade St., Pittsburgh 8, Pa.
Manufacturers of three grades of zircon, technical, ceramic, and electrical, all produced in granular, 200-mesh, and 400-mesh sizes; alloy and welding-rod rutiles in granular and milled forms; ceramic rutile; ilmenite used in titanium alloys.

Orton, Edward, Jr., Ceramic Foundation J. L. Carruthers
1445 Summit St., Columbus 1, Ohio
A testamentary trust manufacturing standard pyrometric cones in large and small (P.C.E.) sizes from cone 022 to cone 42. Excess income from cone sales is used for research in the laboratories of the Foundation and in various schools for the benefit of the industry.

Owens-Corning Fiberglas Corp. F. V. Tooley
Newark, Ohio
Manufacturers of glass in fiber or filament form (glass mineral wool, filter and mat products, and glass textiles) used principally for thermal and acoustical insulation, air filtration, electrical insulation, plastics reinforcement, and industrial service fabrics.

Owens-Illinois Glass Co. W. A. Mahaffy
601 36th Ave., Oakland 1, Calif.
Manufacturers of a complete line of glass containers.

Owens-Illinois Glass Co. E. W. Summers
General Engineering Dept., Alton, Ill.
Makers of Duraglas containers, wide and narrow mouth, for food products, pharmaceuticals, prescriptions, chemicals, proprietary items, milk, cosmetics, beverages, wine, and liquor; tumblers and crystal; structural block; Hemingray insulators; corrugated fiber containers; wood cases; metal and plastic closures; molded products.

Pacific Clay Products Roy Lacy
Box 145, Station A, Los Angeles 31, Calif.
Manufacturers of steatite insulators, glazed bath tile, sewer pipe, firebrick, fire clay, drain tile, colored pottery, stoneware, electrical conduit, ceramicweld clay pipe, hollow building tile, floor tile, flue lining, and chimney pipe.

Pacific Coast Borax Co. F. T. Winters
51 Madison Ave., New York 10, N. Y.
Manufacturers and distributors of borax, boric acid, borax glass, boric anhydride (anhydrous boric acid), and other special borate products for the glass and ceramic industries. Bulletins and technical service are offered.

Paden City Pottery Co. Merrill C. Sondles
Paden City, W. Va.
Manufacturers of two lines of semiporcelain dinnerware in sets and open stock: (1) Shenandoah ware, underglaze decalcomania in brilliant, colorful floral decorations, and (2) Tu-tone ware, wide underglaze ivory shoulder, with gold lines, stamps, and floral border decalcomania.

Paper Makers Importing Co., Inc. Charles Brian
640 North 13th St., Easton, Pa.
For more than fifty-six years miners and importers of china and ball clay from Cornwall, Devon, and Dorset, England, providing only the better grade of materials for use throughout the ceramic industry in both the United States and Canada.

Pass & Seymour, Inc. R. H. Pass
Solvay Station, Syracuse 9, N. Y.
Since 1890, manufacturers of electrical wiring devices consisting of switches, receptacles, and other items; electrical porcelain for use in own products and special parts for others; during the war, land mines and fuses specially developed for the Ordnance Department.

Pearson, E. J. & J., Ltd. C. W. Thomas
Firebrick Works, Stourbridge, England
Five associated companies established in 1860 to manufacture fire-clay, silicious, and high-alumina refractories of every description for all types of industrial furnaces by the casting, dry-press, stiff-plastic, pneumatic, and hand-moulding processes.

Pemco Corporation Richard Turk
5601 Eastern Ave., Baltimore 24, Md.
Manufacturers of porcelain enamel frits and clays; ceramic glaze frits; colors for enamels, glazes, glass, plastics, and paints; special chemicals for the industry; plant and laboratory layout and engineering service on request.

Pennsylvania Bottle Co. William Gallagher
311 Horton Ave., Sheffield, Pa.
Manufacturers of flint-glass containers including bottles for (1) condiments, both wide and narrow mouth, (2) liquor, wine, beer, and soda, and (3) miscellaneous uses; one furnace and eight glassforming machines.

Pennsylvania Pulverizing Co. William J. Woods
Box 587, Lewistown, Pa.
Producers of flint which over the past forty years has become the standard of quality for American ceramic industries; plants located at Mapleton, Pa., Hancock, W. Va., and Newport, N. J.

Pennsylvania Salt Mfg. Co. R. S. Roeller
1000 Widener Bldg., Philadelphia 7, Pa.
Manufacturers of products from salt, sulfur, bauxite, fluorspar, and Greenland cryolite ore for use in agriculture, water purification and sewage disposal, metal industries, ceramics, synthetic rubber, oil refining, pulp and paper, textiles, leather, laundry and dry cleaning, and household sanitation.

Pettinos, George F., Inc. George F. Pettinos, Sr.
1206 Locust St., Philadelphia 7, Pa.
Pioneers in mining, importing, and refining of graphite; miners and producers of foundry sands, glass sands, industrial sands, filter and sandblast sands; foundry supplies; high-temperature cements and insulating cements.

Pfaudler Co. O. I. Chormann
89 East Ave., Rochester 4, N. Y.
Engineers and fabricators of corrosion-resistant process equipment, consisting of glass-lined steel, stainless steels, nickel, Monel and clad metals.

Pittsburgh Plate Glass Co. C. E. Fulton
Creighton, Pa.
Manufacturers and distributors of plate glass and window glass; a full line of paints and varnishes; heavy chemicals, including soda ash, caustic soda, and chlorine; recently, a plastic under the name of Allymer.

Pittsburgh Plate Glass Co., Columbia Chemical Div. R. W. Miller
Barberton, Ohio
Producers of Columbia soda ash, made to the most exacting standards, which is especially suitable for the preparation of frit; also alkalis; service to customers through offices in principal cities and distributors in every market area.

Plibrico Jointless Firebrick Co. W. A. Schaefer
1800 Kingsbury St., Chicago 14, Ill.
Manufacturers of plastic firebrick, castable refractory material, and refractory cements; maintain nationwide installation and boiler-setting service; also install boiler baffles; complete engineering service on boiler-setting construction and furnace design.

Polaroid Corp. D. B. Hummel
211 Massachusetts Ave., Cambridge 39, Mass.
Manufacturers of special optical equipment utilizing the principle of polarized light; special filters and glare-control equipment for the armed forces.

Porcelain Metals Corp., Inc. P. B. McBride
1400 South 13th St., Louisville 10, Ky.
Manufacturers of stampings, metal parts, and shapes to order; design, tool, and form metal parts by deep drawn, formed, rolled, or stamped to close tolerances; fabricate and weld assemblies; shapes can be porcelain enameled or furnished in other specified finishes.

Porcelain Products, Inc. John G. Loy
Box 300, Findlay, Ohio
Manufacturers of a complete line of electrical porcelain insulators ranging from the smaller types for low-voltage house wiring to high-voltage insulators for power transmission; also a limited line of porcelain wiring devices.

Portsmouth Clay Products Co. H. S. Davis
Portsmouth, Ohio
Manufacturers of first-, second-, and third-quality firebrick; producers of fire clay; plastics.

Potters Supply Co. Dewitt D. Irwin
East Liverpool, Ohio
Manufacturers of pins, stilts, thimbles, spurs, saggers, and crucibles; tile for decorating kilns. Distributors of clay, firebrick, imported Paris white, domestic whiting, Georgia kaolin, and modeling clay.

Precision Grinding Wheel Co., Inc. George F. Kohn
8301 Torresdale Ave., Philadelphia 36, Pa.
Established in 1920 to manufacture a complete line of vitrified and organic bonded abrasive products, of outstanding quality of performance, such as high-speed snagging wheels, and "cavity clearance" wheels for tungsten carbide tools.

Pretoria Glass Works I. Donen
Box 863, Pretoria, South Africa

Promat Division, Poor & Co. A. E. Chester
851 S. Market St., Waukegan, Ill.
Manufacturers of orthosilicate finishes for iron and steel products for rust-proofing purposes.

Puerto Rico Clay Products Corp. W. J. Stubbins
Box 4083, San Juan, Puerto Rico

Purinton Pottery Co. B. S. Purinton
Shippenville, Pa.
Free-brush decorations on ceramic articles, useful in the home, and containers for packaging.

Pyro Clay Products Co. O. E. Miller
Oak Hill, Ohio
Organized in 1909, this company manufactures standard refractories, special shapes, and refractory specialties consisting of Ohio select first-quality brick of Sciotoville flint and second-quality brick of Lower Kittanning clay; also cements, castables, plastics, and ladle-lining material.

Quigley Company, Inc. R. J. Demaison
527 Fifth Ave., New York 17, N. Y.
Manufacturers of Hytempite, a standard high-temperature refractory cement, and also a complete line of refractory and insulating specialties; complete refractory engineering and field services.

Ramtite Company Louis J. Jacobs
2563 West 18th St., Chicago 8, Ill.
Manufacturers of Ramtite plastic refractory, Fracto-crete castable refractory, and Esso Bond high-temperature bonding mortar; engineering and construction departments design and erect solid and suspended-type walls and arches and economy boiler baffles.

Ransome Machinery Co. J. C. Lukas
Dunellen, N. J.
Manufacturers of mixing machinery; concrete mixers and pavers.

Reed, F. E., Glass Co. Arthur F. Reed
860 Maple St., Rochester, N. Y.
Manufacturers of glass containers for milk, beverages, beer, and liquors; packers' ware.

Refractory & Insulation Corp. Christopher Branda
Port Kennedy, Pa.
Manufacturers of industrial refractory and insulating materials including brick mortars; castable cements; plastic firebrick; block, tile, and plastic-cement insulation; and mineral-wool blankets.

Remmey, Richard C., Son Co. G. Bickley Remmey
Hedley St. and Delaware River, Philadelphia 37, Pa.
Manufacturers of fire-clay silicon carbide; semisilicon carbide, mullite (clay bonded), mullite (mullite bonded), alumina (clay bonded), and alumina (99% plus) refractories; plastic firebrick; high-temperature cement; fire clay; alumina oxide cement; and silicon carbide cement.

Republic Stamping & Enameling Co. P. A. Mallonn
Box 471, Canton 1, Ohio
Manufacturers of porcelain enameled kitchenware.

Republic Steel Corp. L. D. Mercer
Republic Bldg., Cleveland 1, Ohio
Manufacturers of iron and steel products. Of particular interest to the ceramic industry are the following products: flat-rolled products including Toncan iron enameling sheets; alloy and stainless steels; bolts, nuts, and rivets; tubular products; and pig iron.

Riddell, W. A., Corp. L. A. Henderson
Bucyrus, Ohio
Manufacturers of a complete line of the most modern clay-plant equipment. Everything furnished from the clay bank to the storage shed. Motto, "Built right, run right" machinery.

Robeson Process Co. 'Asgeir Riis
500 5th Ave., New York 18, N. Y.
Producers of binding materials for the ceramic and foundry industries.

Robinson Ventilating Co. Robert R. Robinson
Zelienople, Pa.
Manufacturers of fans for waste heat, dust collecting, and general ventilation; oil- and gas-burner blowers; forced and induced draft for coal; fans for cooling men and products: fans for driers; engineering service for the design of driers, dust-collecting systems, and general ventilation.

Rookwood Pottery Division, Sperti, Inc. H. Leslie Moody
Beech and Kenilworth Aves., Cincinnati 12, Ohio
Founded in 1880, Rookwood Pottery produces fine ceramic artware and is noted the world over for individually underglaze decorated items; pledged to maintain the high standards of quality, craftsmanship, and beauty that gained this enviable reputation for Rookwood.

Roseville Pottery, Inc. Robert P. Windisch
Zanesville, Ohio
In business for more than fifty years as manufacturers of artware and decorated utility ware; major output consists of underglaze decorated art pottery and some decorated items of utility value such as teapots and pitchers.

Ross-Tacony Crucible Co. K. E. Buck
Tacony, Philadelphia 35, Pa.
Manufacturers of crucibles (both clay graphite and carbon-bonded types) for melting metals and graphite stopper heads for pouring steel; also special refractory shapes and refractory cements.

Royal China, Inc. W. H. Hebenstreit
Sebring, Ohio
Manufacturers of high-grade semiporcelain dinnerware for all classes of trade; also cooking ware and fancy ware. Special attention is given to the promotion and premium trade.

Rundle Mfg. Company M. A. Dantzler
3305 W. Forest Home Ave., Milwaukee 7, Wis.
Peacetime products consist of cast-iron porcelain enameled bathtubs, kitchen sinks, and lavatories made at two plants. War work consists of heat-treating steel castings, forgings, normalizing, stress relieving, and shot blasting.

Rustless Iron Co., Ltd. H. Whitaker
Trico Works, Keighley, England
Vitreous enamel finish is applied to goods made by customers, comprising ranges, gas and electric cookers and washing equipment, refrigerators, reflectors, and a wide variety of similar articles for domestic use.

Safety Grinding Wheel & Machine Co. C. B. Tilton
Box 746, Springfield, Ohio
Manufacturers of a complete line of grinding wheels, as well as a special line of machinery suitable for foundries and steel mills.

Salem China Co. F. W. McKee
Salem, Ohio
A medium-sized, well-modernized plant devoted to the manufacture of medium-priced dinnerware, which is nationally advertised. A splendid reputation for steady employment over a long term of years.

Savannah Kaolin Co. F. H. Opper
314 American Bldg., Box 184, Savannah, Ga.
Miners of G-1 Refractory, White Clay, the clay of authority and strength; cone 34; crude, mine-run, or dried, crushed, and pulverized; highest plasticity, enormous load-carrying capacity, great resistance to slagging and corrosion; eliminates drying and firing cracks in clay casting.

Saxonburg Potteries George H. Aderhold
Saxonburg, Pa.
Manufacturers of steatite resistor sleeves or tubes, bushings, and spacers; parts for electrical heating devices;

special ceramic shapes or parts to specifications; thermocouple insulation.

Seneca Glass Company Harry J. Sigwart
Morgantown, W. Va.
Manufacturers of plain, etched, decorated, and cut tumblers, stemware, jugs, and other pieces.

Shenango Pottery Co. James M. Smith
New Castle, Pa.
Producers of Rimrol hotel and restaurant vitrified china.

Sierra Talc Co. E. J. Ellsworth
724 S. Spring St., Los Angeles 14, Calif.
Mills in Keeler and Los Angeles, Calif., and mines in the Death Valley area of California, Nevada, and New Mexico produce three types of talc: steatite, used in the manufacture of radio insulators and spark plugs; tremolitic, used in pottery and low-fired artware; and fibrous, used in paint.

Simmonds Aerocessories, Inc. J. E. D. McCarty
21–10 49th Ave., Long Island City 1, N. Y.
For many years producers of Simmonds-Benton spark plugs for light planes, this company now makes ceramic plugs for high-output military aircraft engines, specifically, the American-built Rolls-Royce Merlin engine.

Simonds Worden White Co. F. R. Henry
N. Summit St. and Negley Place, Dayton 7, Ohio
Manufacturers of grinding wheels, machine knives, and hand tools.

Smith & Stone, Ltd. B. Stone
Georgetown, Ontario, Canada
Established in 1920, manufacturers of porcelain insulation, both wet and dry, and porcelain mouldings of all types; refractory porcelain, Bakelite mouldings, and a complete range of wiring devices.

Smith, A. O., Corporation W. W. Higgins
3533 North 27th St., Milwaukee 1, Wis.
Manufacturers of a broad variety of capital goods and consumer products such as automobile frames, gas-line pipe, oil-well casing, welding electrodes and equipment, pressure vessels, heat exchangers, glass-lined storage tanks and automatic hot-water heaters, and stokers.

Snead, Jane, Ceramic Studio Thomas S. Snead
1822 Chestnut St., Philadelphia 3, Pa.
The services rendered to occupational therapy departments, schools, and small studio potteries are instruction in pottery, firing of pottery, and manufacture and distribution of kilns, glazes, clays, and pottery supplies; emphasis on the more delicate types of glaze effects and modern interpretations.

Solvay Process Co. L. W. Peterson
Syracuse 1, N. Y.
Manufacturers of dense soda ash, calcined potassium carbonate, hydrated potassium carbonate, and ammonium bicarbonate used in glass and ceramics; technical consulting service for the ceramic industries.

Sovereign Potters, Ltd. W. G. Pulkingham
Hamilton, Ontario, Canada
Producers of dinnerware under the trade name Sovereign.

Speer Resistor Corp. G. G. Herrick
Box 111, St. Marys, Pa.
Producers of plastic coil forms, iron coil forms, and carbon resistors for use in electronics; interest in ceramics is in the high *K* dielectric materials used in the manufacture of condensers.

Spinks, H. C., Clay Co. R. B. Carothers
Box 256, Newport, Ky.
Producers of the following ball, sagger, and wad clays: Jernigan ball clay; Champion & Challenger ball clay; Jernigan special sagger clay; Paris top white clay; Paris brown plastic clay; Black & Tan wad clay; Gleason sagger clay.

Square D Company H. S. Freeman
6060 Rivard St., Detroit 11, Mich.
Manufacturers of an extensive line of safety switches, motor controls, circuit breakers, panel boards, switchboards, bus duct, pressure, float, and vacuum switches; in war, circuit breakers for airplanes and special shockproof switches and panel boards for landing craft.

Standard Brick and Tile Corp. H. C. Kleymeyer
Fourth and Vine Sts., Evansville 19, Ind.
Manufacturers of shale and clay rough-texture and smooth face brick, ranging from red to gun metal; shale and clay common brick; structural clay tile and farm drain tile. Distributors of glass block, firebrick, glazed brick and tile; buff and gray face brick.

Standard Porcelain Enamel Co. Harry E. Johnson
American and Luzerne Sts., Philadelphia, Pa.
Porcelain enameling on black shapes provided by any stamping company and standard porcelain enameled parts.

Standard Ultramarine Co. L. F. May
Huntington 18, W. Va.
Manufacturers of ultramarine blue pigments and red pigments for printing and paint; iron blues; lithol toners, alkali blue toners, methyl violet, soluble and acid blue dyestuffs and related colors; blanc fixe (barium sulfate) for the ceramic industry.

Star Porcelain Co. R. W. Ferguson
Muirhead Ave., Trenton 9, N. J.
Manufacturers of electrical porcelain, electrical refractories, low-loss steatite, and semisteatite by pressing, casting, turning, and extrusion; complete toolmaking and diemaking facilities and research laboratory for special insulating problems.

Stark Brick Co. J. H. Stewart
Box 230, Canton, Ohio
Manufacturers of ceramic glazed, clear glazed, salt glazed, and unglazed facing tile and brick; glazed and unglazed standard and heavy-duty floor brick; acid brick and rings; insulating refractory brick, block, and aggregate. Trade names: Brictile, Tribric, Flashtile, Sanitary Floor.

Stauffer Chemical Co. G. W. Poland, Jr.
420 Lexington Ave., New York 17, N. Y.
Manufacturers of borax, boric acid, anhydrous borax and borax glass, potassium nitrate, and sulfur; also other industrial chemicals such as sulfuric acid, chlorine, caustic soda, carbon bisulfide, carbon tetrachloride, silicon tetrachloride, tartaric acid, cream of tartar, tartar emetic, and insecticides and fungicides.

Sterling China Co. W. T. Pomeroy
East Liverpool, Ohio
Manufacturers of vitrified china tableware for hotels, restaurants, steamships, hospitals, and other institutions, also for the armed forces. Wide variety of decorations, decals, prints, and line treatments, offered on three different bodies, white, tan, and ivory.

Sterling Grinding Wheel Co. A. E. Tulk
Tiffin, Ohio
Manufacturers of artificial abrasive grinding wheels, brick, sticks, and specialties since 1885; vitrified, silicate, resin, and shellac-bonded products for use on standard and high-speed grinding machines of all types and makes.

Steubenville Pottery Co. W. J. Mould
Steubenville, Ohio
Manufacturers of high-quality semivitreous tableware distributed by the leading china departments of the country and including the Monticello ware by Herman C. Kupper and the American Modern by Russell Wright.

Streator Brick Co. D. P. Ogden
Streator, Ill.
Producers of shale and fire-clay face brick in smooth and rough textures, shale building brick, oversize brick, and packing-house floor brick; tunnel-kiln and periodic-kiln production facilities; annual capacity 50 million brick.

Strong Manufacturing Co. W. U. Pfaeffli
Sebring, Ohio
Complete manufacturing facilities for black shapes for both hollow ware and flatware; modern enameling equipment for producing fluorescent reflectors, incandescent reflectors, refrigerator equipment and accessories (pans, doors, panels, etc.), together with a short line of kitchenware; contract job enameling.

Structural Clay Products Institute Harry C. Plummer
1756 K St., N.W., Washington 6, D. C.
A national association of brick and tile manufacturers which represents the industry before Government agencies and on committees of national technical organizations. Its principal activities consist of advertising, publicity and public relations, engineering, and research.

Stupakoff Ceramic & Mfg. Co. Semon H. Stupakoff
Latrobe, Pa.
Manufacturers of precision-made ceramic products and metallized ceramics for the electronic, electrical, industrial, and chemical industries; also metal-to-glass hermetic seals, a combination of Kovar alloy and heat-resistant glass, for the same industries; ceramic products of steatite, cordierite, alumina, magnesia, titanium dioxide, and combinations.

Summitville Face Brick Co. H. K. Lynn
Summitville, Ohio
Manufacturers of face brick in straight shades of red and mingled; acid-resisting brick and block; industrial floor brick; quarry tile.

Sur Enamel & Stamping Works, Ltd. M. M. Sur
9 Middle Rd., Entally, Calcutta, India
Manufacturers of enamelled ironware, sign plates, etc.; suppliers to the government and railway and military stores.

Surface Combustion Corp. Harvey C. Weller
2375 Dorr St., Toledo 1, Ohio
Manufacturers for the ceramic industry of continuous annealing and decorating lehrs, batch-type ovens, convexing and bending furnaces, special processing furnaces, continuous conveyer-type pottery decorating kilns, and recuperative tanks for special glasses; combustion engineering service.

Swindell Brothers J. J. Jeffries
Bayard and Russell Sts., Baltimore, Md.
Manufacturers of handmade and machine-made glass containers for foods, drugs, chemicals, pharmaceuticals, prescriptions, wines, whiskies, toilets, perfumes, and cosmetics.

Swindell-Dressler Corp. Philip Dressler
Box 1888, Pittsburgh 30, Pa.
Engineers and manufacturers; designers and builders of every kind of direct-fired and muffle, circular, and straight tunnel kiln, operating at temperatures from decorating to cone 32, fuel fired, electric heated, car, roller-hearth, and walking-beam conveyer types; recirculating radiant gas tube installations, in-and-out and continuous types.

Sylvania Electric Products, Inc. B. S. Ellefson
208–20 Cross Island Parkway, Bayside, Long Island, N. Y.
Manufacturers of radio receiving tubes, cathode-ray tubes, transmitting tubes, incandescent lamps, fluorescent lamps and fixtures, fluorescent powders, tungsten powder and rod, tube parts, wire welds, and electronic equipment. Research and Development laboratories at Flushing, Bayside, and Kew Gardens, New York; manufacturing plants and engineering laboratories in five states; main offices at 500 Fifth Ave., New York, N. Y.

Taylor, Charles, Sons Co. C. R. Taylor
Box 58, Annex Station, Cincinnati 14, Ohio
Manufacturers at both the Cincinnati, Ohio, and Taylor, Ky., plants of fire-clay brick, P. B. Sillimanite, and zircon refractories.

Taylor, Smith & Taylor Co. W. E. Palmer
Chester, W. Va.
Manufacturers of Lu-Ray pastels, underglaze prints, and overglaze decorations. The forty-fifth year of service to the trade with quality dinnerware.

Texas Mining & Smelting Co. W. J. Graveling
Box 559, Laredo, Texas
Manufacturers of antimony oxide under the name Timonox, graded into White Star, Red Star, and Green Star brands, suitable for porcelain enamels; also antimony oxide, under the brand name Stibnox, which is widely used in porcelain enamels.

Thatcher Manufacturing Co. Roy S. Arrandale
1901 Grand Central Ave., Elmira, N. Y.
Manufacturers of glass containers for milk, foods, beverages, beer, and liquors; also Fastpak, vacuum packing machine for food products in glass. Factories at Elmira and Olean, N. Y., and Streator, Ill.

Thermo Fire Brick Co. Howard Hicks
Box 277, Sulphur Springs, Texas
Manufacturers of first-quality and intermediate heat-duty fire-clay brick and a 2600°F. insulating firebrick; first-quality and intermediate brick are made by both the dry-press and stiff-mud processes; also special shapes, cupola blocks, wall and arch shapes, high-temperature cement, plastics, and castables.

Titanium Alloy Mfg. Co. David A. Thompson
Drawer D, Niagara Falls, N. Y.
Manufacturers of zirconium oxide opacifiers, zircon for frit, zirconium silicates for glaze opacification, zircon for bodies, zircon refractories, ferrotitanium alloys for the steel industry, rutile for welding rods, and industrial chemicals.

Trenton Potteries Co. J. F. Collis
Plant No. 5, Box 141, Trenton 1, N. J.
Manufacturers of high-grade vitreous china and Duraclay plumbing fixtures; the line ranges from small drinking-fountain receptors to large hospital pieces such as emergency baths, autopsy tables, etc., including fine water-closet combinations, lavatories, bathtubs, and sinks.

Twyfords, Ltd., Cliffe Vale Potteries A. V. Pimble
Stoke-on-Trent, England
Manufacturers of sanitary pottery in earthenware, vitreous china, and enamelled fire clay; patterns cover sanitary equipment for every class of building, including specialized fixtures required for hospitals, clinics, schools, and factories.

Tygart Valley Glass Co. O. C. Nobls
Washington, Pa.
Manufacturers of glass containers for the food industry.

Tyler, W. S., Co. C. E. Jenke
3615 Superior Ave., N.E., Cleveland 14, Ohio
Largest weavers of precision wire cloth: Double-Crimped square mesh, Ton-Cap and Ty-Rod high-capacity screen cloth and testing sieves. Pioneers in developing efficient screening machinery: Hum-mer, Tyler-Niagara, Ty-Rock screens, and the standard Ro-Tap testing sieve shaker.

Union Electrical Porcelain Works, Inc. F. W. Van Orden
Box 762, Trenton 5, N. J.
Manufacturers of porcelain for electrical wiring devices, neon accessories, industrial specialties, noncorrosive substitutes for metal parts, and special shapes; die-shop facilities; practically all production now for armed services.

United Clay Mines Corp. K. E. Ward
Oakland and Prospect Sts., Trenton 6, N. J.
Producers of domestic clays for the pottery industry; also bentonite.

United Glass Bottle Mfgrs., Ltd. J. Tipping
8, Leicester St., London, W.C. 2, England
Manufacturers of glass containers of all descriptions in flint, amber, blue, dark green, light green, and opal colours; pressed domestic tableware and tumblers; metal and plastic closures.

United States Glass Co. C. W. Carlson
Tiffin, Ohio
Manufacturers of plain and decorated tableware; fountain, bar, and restaurant glassware; industrial specialties and scientific ware.

United States Gypsum Co. J. S. Offutt
300 W. Adams St., Chicago 6, Ill.
Manufacturers and distributors of U.S.G. pottery plasters, AA dolomite, special polishing plasters, U.S.G. plate-glass plasters, raw dolomite limestone, dolomite and high-calcium lime, glasshouse gypsum, and terra alba throughout the United States and the world.

Universal Clay Products Co. C. A. Bloor
Sandusky, Ohio
Manufacturers of dry-process electrical porcelain insulators, standard and special electrical porcelains, glazed and unglazed; refractory specialties; also specialists in producing items to customers' drawings and specifications.

Universal Dental Co. Joseph Kohn
48th and Brown Sts., Philadelphia, Pa.
Organized in 1917 for the manufacture of porcelain teeth exclusively, for use by dentists in making prosthetic restorations. Before the war, products were distributed in every country of the world; a fair percentage is now supplied to the armed forces.

Universal Potteries, Inc. G. D. Agnew
Cambridge, Ohio
The products of this company consist of Camwood-shape dinnerware and a complete line of ovenproof cookingware in various colors and types of decorative treatment.

Universal Sanitary Mfg. Co., Inc. W. Keith McAfee
New Castle, Pa.
Manufacturers, in addition to a popular line of bathroom, kitchen, and laundry fixtures, of a vitreous china bathtub, another "first" for Universal; other innovations have been casting of sanitary ware, firing pottery in continuous kilns, colored ware for bathrooms, and the use of production conveyers.

Valentine, M. D., & Brother Co. W. H. Peterson
Woodbridge, N. J.
Manufacturers of Valentine XX semisiliceous fire-clay brick, which is noted for its resistance to spalling and its ability to withstand load under temperatures; new records have been made from its use in steel mills, ceramic tunnel kilns, and large oil refineries.

Vanderbilt, R. T., Co., Inc. Ira E. Sproat
230 Park Ave., New York 17, N. Y.
Sales agents for Cherokee Georgia kaolin, Peerless kaolin, Pyrax pyrophyllite, Clay Deflocculant, Rayox titanium dioxide, Redium selenium, cerium hydrate, and tellurium; research on new and old ceramic materials; assistance given to customer problems.

Vereeniging Brick & Tile Co., Ltd. L. Wishart
Box 49, Vereeniging, Transvaal, South Africa
Producers of firebrick and refractories.

Vesuvius Crucible Co. Francis L. Arensberg
Box 8275, Swissvale, Pittsburgh 18, Pa.
The products of this company are in three catagories: (1) graphite stopper heads and nozzles for pouring steel ingots and castings, (2) graphite crucibles for melting all metals, and (3) special shapes such as stirrers, base blocks, covers, saggers, and pyrometer protection tubes.

Victor Insulators, Inc. H. Failmezger
Victor, N. Y.
Producers of wet-process high-voltage porcelain insulators of all types; also special-design porcelain for manufacturers of transformers and switchgear, capacitors, fuse cutouts, potheads, and junction boxes.

Viking Glass Co. G. R. Cummings
New Martinsville, W. Va.
This company is specializing in the highest-quality Swedish-type glassware, with plans underway to produce a complete line under the trade name of Viking. (Successors to the New Martinsville Glass Co.)

Vitrefrax Corp. R. W. Ellison
5050 Pacific Blvd., Los Angeles 11, Calif.
Manufacturers of fire-clay refractories, plastic firebrick, electric-furnace mullite and periclase, castables, fire-clay mortars, chrome mortars, refractory grains, sagger batches, coating materials, and fire clays. Distributors of insulating firebrick, high-alumina, chrome, silicon carbide, and magnesite refractories.

Vitreous Steel Products Co. Edgar H. Weil
Newburg Station, Cleveland 5, Ohio
Manufacturers of porcelain enamel table tops and breakfast sets; job enameling. (Factory at Nappanee, Ind.)

Vitro Manufacturing Co. E. M. Fleck
Corliss Station, Pittsburgh 4, Pa.
Founded in 1909 to manufacture ceramic colors and chemicals; producers of a complete line of colors for potteries, glass decorating, and porcelain enamels; also owners and operators of an ore-refining plant in Canonsburg, Pa.

Vollrath Company Jean C. Vollrath
18th and Michigan Aves., Sheboygan, Wis.
In peacetime, manufacturers of enameled cast-iron ware and steel hollow ware, stainless-steel hollow ware, and cast-iron ground ware; present production largely for the armed services.

Wallace China Co., Ltd. Wallace B. Wood
Box 47, Huntington Park, Calif.
Manufacturers of chinaware and hotel ware.

Walsh Walsh, John, Ltd. W. G. Riley
Soho & Vesta Glassworks, Birmingham 18, England
Producers of first-quality handmade decorative domestic crystal and tableware; special lighting glass for illuminating fittings; scientific reflectors for floodlighting shop windows and the cinema industry; optical prisms for the optical trade and scientific equipment for the armed services.

Walsh Refractories Corp. J. L. Crawford
4070 North 1st Street, St. Louis 7, Mo.
Manufacturers of a complete line of fire-clay refractories, especially for the glass industry, including Walsh vacuum Cast-Flux block, refractory upper structure, feeder parts, checker-brick, high-alumina, superduty, high heat-duty, and intermediate-duty firebrick, high-temperature bonding mortars, plastic refractories, and castable refractories.

Waltham Grinding Wheel Co. Robert L. Lyons
Waltham, Mass.
Producers of bonded abrasives by the vitrified, resinoid, and shellac processes, the line including grinding wheels, cutoff wheels, mounted wheels and points, segments, and hand brick and sticks.

Washington Brick Co. Thomas Somerville III
Washington-Baltimore Blvd., Muirkirk, Md.
Manufacturers of common and oak-bark face brick; originators of the Circle System; cinder blocks; distributors in

the Washington area for firebrick and all structural clay products, including hollow tile, drain tile, sewer pipe, flue lining, glazed brick and tile, glass block, and terra cotta.

Washington Porcelain Co. C. H. Ackerson
Willow St., Washington, N. J.
Manufacturers since 1917 of electrical porcelain for the parent company, The Arrow Hart & Hegeman Electric Co., Hartford, Conn., which is engaged in the manufacture of electrical wiring devices and electrical controls.

Watt Pottery Company Loren M. Watt
Crooksville, Ohio
Manufacturers of a matched line of kitchenware of yellow stoneware body, with sprayed brown stain under the glaze at top and bottom and over-all clear glaze, known by the trade-name Eve-N-Bake; deep-bowl sets, casseroles, roasters, and other pieces, all in matching design.

Wayne Laboratories John J. Shank
17 E. Main St., Waynesboro, Pa.
Analytical, consulting, and research chemists; testing and control of raw materials and finished products, chemical analyses and physical testing and thin-section studies of rocks, minerals, and ceramic materials; control and research for postwar period.

Western Brick Co. I. R. Cline
Danville, Ill.
Producers of face and common building brick in shades of red and buff; ceramic roofing granules and Haydite, a lightweight fired clay aggregate; facilities for the manufacture of paving brick and hollow tile, not regularly produced.

Western Electric Co., Inc. L. I. Shaw
Hawthorne Station, Chicago 23, Ill.
Bell System Supply Department and manufacturers of telephone, telephone-exchange, and outside-telephone-plant equipment; at present, producers of communications and electronic equipment for the Nation's armed forces.

Western Feldspar Milling Co. J. W. Magnuson
1333 W. Maple St., Denver 9, Colo.
Producers of western feldspars for glass, pottery, and enamel plants.

Westinghouse Electric Corp. John D. Harnish
Derry, Pa.
This plant makes electrical porcelain products. In particular, it manufactures high-tension porcelain for transmission and distribution systems; also Prestite and zircon Prestite porcelains for special designs of the communications industry.

Westinghouse Electric Corp., Glass Plant LeGrand Jarrett
Fairmont, W. Va.
This plant produces fluorescent tubes used in the manufacture of fluorescent lamps; stem and bulb blowing tubing for making incandescent and fluorescent lamps; and hand-blown borosilicate bulbs and cylinders for use in the manufacture of electronic devices and incandescent lamps.

West Virginia Brick Co. Claude F. Wiseman
Charleston, W. Va.
Manufacturers of firebrick and producers of fire clay.

Wheaton, T. C., Co. Frank H. Wheaton, Jr.
1118 N. High St., Millville, N. J.
Manufacturers of borosilicate glass for the biological trade for packaging such items as blood plasma, penicillin, and insulin; all types of industrial glassware, radar, and electronic glass components; also a line of perfume and cosmetic containers, including glass-stoppered bottles.

Wheeling Steel Corp. Warren F. Copp
Yorkville, Ohio
Manufacturers of steel products, including special enameling sheets for makers of porcelain enameled hollow ware; plants at Steubenville, Yorkville, Martins Ferry, and Portsmouth, Ohio; and East Steubenville, Beech Bottom, Warwood, Wheeling, and Benwood, W. Va.; general offices at Wheeling, W. Va.

Willson Products, Inc. Thomas A. Willson
Box 622, Reading, Pa.
Originators of Willsonite, Willson-Weld, Alubro-Weld, Super-Tough, and other special glasses for eye protection; manufacturers of sunglasses and a complete line of eye, head, and respiratory protective devices; also air-analysis apparatus for industry.

Winstone's Roofing Tile Works, Ltd. C. G. Hillier
Taumarunui, North Island, New Zealand

Wisconsin Porcelain Co. L. A. Stohl
Sun Prairie, Wis.
Manufacturers of approximately 2000 different items of special porcelain material, wet-process excluded; also refractory material of all types, steatite, and material used for filtering purposes; four tunnel kilns and about 270 employees.

Woodville Lime Products Co. J. Robert Cowell, Jr.
2140 Jefferson Ave., Toledo, Ohio
For more than forty years producers of finest-quality high-magnesium lime, oxide and hydrated; consistently low iron content; prompt shipments can be made from plant of large capacity.

Worcester Royal Porcelain Co., Ltd. Joseph F. Gimson
Worcester, England
Producers of fine bone china dinnerware, statuettes, and ornamental ware; hard felspathic porcelain laboratory ware and cooking hotel ware; alumina porcelain sparking-plug insulators and technical porcelains.

CORPORATION MEMBERSHIP

If your company is not represented in the foregoing list, it can be brought into The American Ceramic Society at any time. Just ask any member for an application blank or write to this office.

THE AMERICAN CERAMIC SOCIETY, INC.
2525 NORTH HIGH STREET COLUMBUS 2, OHIO

COMMITTEE REPORTS

REPORT OF COMMITTEE ON STANDARDS

The American Ceramic Society and its members are interested in any phase of work that deals with nomenclature, definitions, methods of test, or standards that deal with the ceramic raw materials or ceramic products. Because of this interest, The Society has appointed representatives of The Society on many of the organizations whose principal activities deal with standards work. These representatives of The Society help with the standards work of the various organizations and at the same time protect the interest of The Society in that work.

Each of the Divisions of The Society has a Standards Committee. Many of these Committees have been active in writing definitions, specifications, or standards which, when applicable, have been adopted by the standards organization most interested. They are preparing summaries of all the definitions and standards that pertain to the work in their Division. Undoubtedly, when this work has been completed, The Society will have a very complete summation of all standards pertaining to the ceramic industries.

This report of the Standards Committee of The Society is a compilation of the reports of the representatives of The Society on organizations dealing with standards and the reports of the several Division Standards Committees.

During the war years, the work of many standards organizations has been somewhat curtailed, and because of this the reports of work of some of the organizations are short and contain little information that is of interest. There has been some standards work that pertains to the war effort, and it has been necessary to keep these activities secret so that they would not get into the hands of the enemy. This has curtailed the amount of information that could be reported. Undoubtedly after the duration many of the standards activities of the war period will be made public by some and there will be renewed activity by others that have had to curtail their activities because of the war effort.

American Foundrymen's Association

Joint Committee on Foundry Refractories, L. C. HEWITT, Laclede-Christy Clay Products Co., St. Louis, Mo.: The Committee has voted to disband. It was felt that the Committee has fulfilled its function and any further work can be handled by the A.F.A. Committee on Refractories.

Sand Research Committee, H. M. KRANER, Bethlehem Steel Co., Bethlehem Pa.: This Committee is attempting to develop a hot compression test wherein the sand test specimen is subjected to heat shock and load, thereby testing the ability of a molding sand to maintain strength against hot metal. As the clay and sand are ceramic materials, it seems logical that certain ceramic tests will eventually have application in the determination of the value of these sands.

Three conferences were held, one at Buffalo, one at Cornell where the Fellow is doing the research, and another at Bethlehem. The conferences covered equipment and methods of conducting the tests.

American Society for Testing Materials

Committee A-1 on Steel, H. F. STALEY, Metal & Thermit Corp., New York 5, N. Y.: There were no activities during the year of any interest to The American Ceramic Society.

Committee C-4 on Clay Pipe, C. M. DODD, Iowa State College, Ames, Iowa: A meeting was held in Chicago, during which the following action was taken:

"Revision of Standards": The revised Specification for Standard Strength Clay Pipe C-13-40 as submitted by the Subcommittee was approved and submitted to the Society for final approval with the following minor changes: that 2-foot lengths of pipe be permitted for the 8-, 10-, and 12-inch pipe in column 3, Table I; that Section 26 (*b*) be eliminated; and that the title of the Specification be changed to read, "Standard Specification for Standard Strength Clay Sewer Pipe." Specification for Laying Pipe C-12-19 was referred to Subcommittee II for revision.

"New Standard Specifications": The Specification for Extra Strength Pipe as submitted by the Subcommittee was approved and submitted to the Society for final approval, except that footnote (2) was stricken from the Specification and the following note was added at the bottom of Table I: The average actual inside diameters of pipe having normal thickness of barrel shown in Table I are smaller than the nominal sizes.

This comprised the principal activity of this organization for the year.

Committee C-5 on Fire Tests of Materials and Construction, J. L. CARRUTHERS, Ohio State University, Columbus 10, Ohio: None of the work of the Committee during the past year was concerned with ceramic materials or items that would be of interest to the members. The Committee is very active in its work and in the future undoubtedly will conduct work that will be of interest.

Committee C-6 on Drain Tile Specifications, J. LEO CHILD, Hancock Brick & Tile Co., Findlay, Ohio: Owing to the war conditions, there has been nothing whatsoever accomplished, but there are possibilities for a sizable amount of work that will be required after the duration.

Committee C-7 on Lime, C. R. AUSTIN, Battelle Memorial Institute, Columbus 1, Ohio: The activities of this Committee can be summarized as follows:

(1) New specifications have been drawn for (*a*) hydrated lime for masonry purposes and (*b*) special finishing hydrated lime. The latter is the autoclaved dolomitic lime being manufactured in increasing amounts commercially. These specifications are now in shape to submit to letter ballot of Committee C-7 as a whole.

(2) A number of tests for lime have been developed by Subcommittee V of C-7, and these are now ready for submission to letter ballot of Committee C-7 as a whole. These tests are (*a*) Pitting and Popping, (*b*) Water Retentivity, and (*c*) Determination of Unhydrated Oxide Content.

Committee C-8 on Refractories, J. W. WHITTEMORE, Virginia Polytechnic Institute, Blacksburg, Va.: This Committee has been extremely active during the year and has adopted several tentative standards as standards, revised others, and adopted several tentative standards. The titles of these are listed below. If any member is interested in any of these, he may refer to the publications of the A.S.T.M. or write to The Society representative.

I. NEW TENTATIVE STANDARDS

(1) Methods of Test for Bonding Strength of Air-Setting Refractory Mortar.

(2) Methods of Test for Refractoriness of Air-Setting Refractory Mortar.

(3) Methods of Test for Thermal Conductivity of Refractories.

(4) Methods of Test for Thermal Conductivity of Insulating Firebrick.

(5) Methods of Test for Thermal Conductivity of Fire-Clay Refractories.

(6) Definition of Air-Setting Refractory Mortar.

(7) Definition of Fire-Clay Plastic Refractory.

(8) Specification for Air-Setting Refractory Mortars (Wet Type) for Boiler and Incinerator Services (same as present C 178-43 T except for removal of the two tests which are to become separate methods; see items 1 and 2).

II. REVISION OF TENTATIVE STANDARDS

(9) The tentative Standard C 155-41 T (Insulating Back-Up Block and Insulating Firebrick) was revised.

III. Adoption of Tentative Standards as Standards

(10) Standard C 180–43 T (Panel Spalling of Fire-Clay Plastic Refractories).

(11) Standard C 181–43 T (Workability Index of Fire-Clay Plastics).

IV. Adoption as Standard of Tentative Revisions of Standards

(12) Revision of C 38–42 (General Procedure for Panel-Spalling Test).

(13) Revision of C 107–42 (Panel-Spalling Test for High Heat-Duty Brick).

(14) Revision of C 122–42 (Panel-Spalling Test for Superduty Brick).

Committee C–11 on Gypsum, H. E. Simpson, Mellon Institute, Pittsburgh 13, Pa.: The Committee has not met during the past year and has not had any activity of interest to The Society.

Committee C–15 on Manufactured Masonry Units, J. W. Whittemore, Virginia Polytechnic Institute, Blacksburg, Va.: Much of the research and other activities that have often yielded information warranting new recommendations affecting standards have been retarded by wartime conditions. Moreover, experiences with new products and processes and unit masonry structures built during the war have not been reported with sufficient completeness to warrant analysis and conclusions, and the nature and extent of revisions cannot be foretold now. There has been a revision of the Specification for Vitrified Clay Filter Block for Trickling Filters (C 159–41 TO) which changed the requirements regarding drainage channels. All of the subcommittees have kept pace with the requirements for masonry that have developed due to the war, and this information will undoubtedly be incorporated in the specifications after the war.

Committee D–5 on Coal and Coke, A. W. Gauger, Pennsylvania State College, State College, Pa.: Committee D–5 on Coal and Coke held two meetings during 1944, the dates being February 28 in Cincinnati, Ohio, and June 21 in New York. The representative was able to attend only the latter meeting. There was no action taken which in the opinion of the representative requires consideration by The Society.

Subcommittee D–III–5 on Special Constituents is devoting its attention largely to the determination of sulfur. A research program on this problem, particularly relating to organic sulfur, is under way at the Institute of Gas Technology at Chicago.

Committee D–9 on Electrical Insulating Materials, L. E. Barringer, General Electric Co., Schenectady, N. Y.: Following is a brief report of the activities of Committee D–9 relating to ceramic and glass insulating materials.

(1) Investigations have been under way to study the degree of uniformity in test results obtained by several laboratories when testing the loss factor of steatite after water immersion.

(2) Emergency Standards for Communication and Pin-Type Lime Glass Insulators (ES–41) have been formulated.

(3) An alternative method for Thermal-Shock Testing Pin-Type Glass Insulators, using the Preston apparatus, has been adopted and will be appended to D 468–42. This testing procedure is discussed by K. C. Lyon and R. F. Scott in the appendix to Committee D–9, A.S.T.M. booklet, page 469, 1944. The Preston apparatus is shown in A.S.T.M. Standard Method C 149.

American Society of Mechanical Engineers

Petroleum Division, H. R. Straight, Straight Engineering Co., Adel, Iowa: There is nothing to report as the Committee is inactive.

Process Division, W. Keith McAfee, Universal Sanitary Manufacturing Co., New Castle, Pa.: The Process Division of the American Society of Mechanical Engineers has done nothing of interest to the ceramic industry during the past year. The type of activities carried on in this Division of the A.S.M.E. described below is included in this report so that the membership of The American Ceramic Society may be cognizant of the possibilities of this type of work.

This Committee of the A.S.M.E. was organized to study the unit processes used in the so-called process industries, among which they number the ceramic industry. The Committee is particularly interested in the equipment for these processes. The processes are studied from a functional point of view, i.e., grinding, dehydrating, heat interchange, etc. The committees are organized to study and report on these various processes. For instance, the Committee on Dehydration has written a tentative Test Code for Dryers. In some cases where process industries are not large enough to maintain a technical society, committees have been organized under the auspices of this Division. The sugar industry had such a committee, and also the cottonseed oil industry.

The American Institute of Chemical Engineers, The American Ceramic Society, and the American Society of Heating and Ventilating Engineers are the only organizations which have officially appointed liaison representatives to this Division. Shortly after the Division was organized, they honored The American Ceramic Society by electing W. Keith McAfee to the Council and finally Vice-Chairman of the Division. At one time, he was asked to organize a Ceramic Committee and endeavored to do so. He could not find enough members of our industry who were also members of the A.S.M.E. to make such a committee feasible, although for several years he was carried as Chairman of such a committee in their record.

This gives some picture of the work of this Division. It is quite worth while and could be a source of considerable information to our industry. Their activities have been somewhat curtailed owing to the present abnormal conditions. The setup of Division meetings in the A.S.M.E. is different than in The American Ceramic Society. Divisions petition for time on the program of a particular meeting. The Program Committee tries to work them in, and meetings are scheduled for one, two, or more half days, as their projected programs seem to warrant it.

American Standards Association

Committee A–40 on Minimum Requirements for Plumbing and Standardization of Plumbing Equipment, H. Whittaker, Koebel Diamond Tool Co., Detroit 13, Mich.: (1) On June 26, 1944, copies of the tentative draft of Sections 1 Definitions, 7 Plumbing Fixtures, 10 Soil and Waste Pipe, 11 Storm Drains, 12 Vents and Venting, 14 Inspection and Tests, and 16 Administration were distributed broadly to organizations for criticism. After revision, following receipt of criticism, it is intended to present to the American Standards Association for approval the material listed above, in combination with the other seven sections previously revised as American Standards Plumbing Code A–40. Section 7, Plumbing Fixtures, should be of particular interest to sanitary-ware manufacturers as it covers standards for materials, design, and operating features for sanitary-ware products. (2) A joint meeting of members of Sectional Committee A–40 and Subcommittee 1 was called for Friday, July 14, 1944, and held in Room 1101 of the Engineering Societies Bldg., New York, N. Y., to discuss the proposed American Standard Plumbing Code A–40. At the meeting, the proposed Standard A–40 was reviewed. Further business included election of officers and members and it was decided to appoint a new subcommittee to develop a proposed American Standard for hot-water storage tanks.

Committee A–41 on Brick Masonry, J. W. Whittemore, Virginia Polytechnic Institute, Blacksburg, Va.: Committee A–41 reached an agreement during 1943 and the resulting standard was transmitted to the American Standards Association by the National Bureau of Standards, which acted as sponsor for the project. The Standard, "American Building Code Requirements for Masonry," was published by both the National Bureau of Standards and the American Standards Association (A 41.1–1944).

Committee A–62 on Coordination of Dimensions of Building Materials and Equipment, Frederick Heath, Jr.

Owens-Corning Fiberglas Corp., Toledo, Ohio: The A-62 Executive Committee, which is actively carrying forward the work of the Committee, has met at intervals of approximately two months during the year.

Material progress has been made in publicizing the objectives of the project through the medium of the trade press and meetings of architects and others interested in construction. The Producers' Council distributed with its Bulletin No. 46 a descriptive pamphlet entitled, "Modular Planning as Related to Building Design," and the Subcommittee on Modular Products of the Council's Technical Committee has been particularly cooperative in the effort to interest producing groups in the construction industry.

The following proposed standards, widely distributed for criticism and review and revised in the light of the comments received, are about to be submitted to the A-62 Sectional Committee for approval preliminary to their submission to the American Standards Association: (1) Proposed American Standard Basis for the Coordination of Dimensions of Building Materials and Equipment, A-62.1 and (2) Proposed American Standard Basis for Coordination of Masonry, A-62.2.

The progress of several of the study subcommittees of A-62 promises the development of supplementary standards, based on the basic standards as applied to specific products, within a reasonable period.

Committee Z-10 on Scientific and Engineering Symbols, RALSTON RUSSELL, JR., Research Labs., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.: This Committee is apparently one of those whose activities have been suspended during the war.

Committee Z-23 on Testing Sieves, ARTHUR S. WATTS, Ohio State University, Columbus 10, Ohio: This Committee has received no assignments since the report of 1943 and therefore there is nothing to report.

Committee Z-26 on Specifications and Methods of Test for Safety Glass, GEORGE WATKINS, Libbey-Owens-Ford Glass Co., Toledo, Ohio: As reported a year ago, the activities of this Sectional Committee were suspended for the duration and there were no meetings of the Committee held during 1944.

nternational Association for Testing Materials

S. M. PHELPS, Mellon Institute, Pittsburgh 13, Pa.: At present, arrangements are being made to appoint a committee of three in the Argentine to serve on I.A.R.M. (Instituto Argentino de Racionalizacion de Materiales) under the guidance of the executive representative of the American Standards Association, who in turn is serving the interest of Committee C-8 on Refractories of A.S.T.M.

International Commission on Glass Technology

J. C. HOSTETTER, Mississippi Glass Co., St. Louis 7, Mo.: The International Commission on Glass Technology has been inactive for several years, and for 1944 there is nothing to report.

International Chemical Congress

ALEXANDER SILVERMAN, University of Pittsburgh, Pittsburgh 13, Pa.: The International Union of Chemistry meetings were interrupted by World War II and a conference has not been held since 1938 in Rome. The last meeting of the International Congress of Chemistry was held in Madrid, Spain, in 1934. These meetings have also been interrupted by the war.

Inter-Society Color Council

I. A. BALINKIN, University of Cincinnati, Cincinnati 21, Ohio: A discussion session on "Small Color Differences" was held at the thirteenth annual meeting of the Inter-Society Color Council March 1, 1944. "How Small Color Differences are Met in Ceramic Industries" was discussed by the following delegates present at the technical session: R. S. Hunter, Campbell Robertson, and I. A. Balinkin. Written communications were read from A. S. Watts and Edward Schramm. These discussions were published in the *American Dyestuff Reporter* and also appeared in a separate pamphlet form. A few copies of the latter are still available and will be sent free of charge to those requesting them by writing to I. A. Balinkin, University of Cincinnati, Cincinnati 21, Ohio.

Illuminating Engineering Society and Luminous Glassware Guild

H. H. BLAU, Federal Glass Co., Columbus 7, Ohio: No report.

United States Department of Commerce, Division of Simplified Practice; Permanent Committee on Simplification of Variety and Standards of Vitrified Paving Brick

C. C. BLAIR, Metropolitan Paving Brick Co., Canton, Ohio: The 1943 Variety Survey of Paving Brick was not printed but it is planned to make a joint publication of the 1943 and 1944 reports.

Questionnaires have been sent out by the Division of Simplified Practice of the National Bureau of Standards and as soon as these are returned by the manufacturers the figures will be compiled and the combined report written. The five recognized varieties were reaffirmed without change in 1943.

REPORTS OF THE DIVISIONS OF THE SOCIETY

Enamel Division

R. L. COOK, University of Illinois, Urbana, Ill.: This Division has made a review and study of the various enamel tests. Through a questionnaire to the members of the Division, the extent of the use of the various tests was determined. The results of the questionnaire are to be summarized and this summary used as a basis for recommendations to the Division. This work with that of the past few years will give this Division very complete standard recommendations.*

Materials and Equipment Division

R. C. MEEKER, Kentucky-Tennessee Clay Co., Alliance, Ohio: There has been no standards activity of this Division during the year.

White Wares Division

F. P. HALL, Onondaga Pottery Co., Syracuse 4, N. Y., AND L. E. THEISS, General Electric Co., Schenectady 2, N. Y.: During the past three or four years, this Division under the direction of Dr. Hall has been compiling the various methods of test, definitions, and specifications that apply to the materials and products of the whiteware and allied industries. Because of the difficulties during the war period, it has been impossible to complete this work, but it is hoped that it will be ready for submission to The Society in the near future.

A specification for the Standardized Talc-Testing Procedure was submitted to The Society during the year, after approval by the Division and the Standards Committee (see the November, 1944, *Bulletin*, pp. 432-33).

A committee of the Division has worked for the past three years on tests and specifications for ball clays. This work is proceeding and was reported on at the annual meeting of the Division in Pittsburgh (see the April, 1945, *Bulletin*, pp. 122-38).

Members of the Division learned of the misuse of the word "porcelain" by the Enamel Division and a letter of protest was sent to the Enamel Division through the Chairman of that Division.†

This report is respectfully submitted to the Board of Trustees of The Society with appreciation of the various representatives of The Society who have made possible this report by their contributions.

—J. W. WHITTEMORE, *Chairman*

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* A more extensive report of the Enamel Division Standards Committee will be published in the July *Bulletin*.

† This letter and the Carter reply follow on p. 215.

Blacksburg, Va.
February 23, 1945

Mr. H. D. Carter, *Chairman*,
Enamel Division

Dear Mr. Carter:

Recently there has come to our attention the fact that some manufacturers of enameled metals have been using the term "porcelain ware" to describe their products. The members of the White Wares Division of The American Ceramic Society believe that this is not the correct use of this term and unfair to the whiteware manufacturers.

Since, from the early history of man, this term "porcelain" has been used to indicate a particular form of pottery, it is apparent that ware made from metals should not come under this describing term. As you know, "pottery" in its widest sense includes all objects fashioned from clay, or mixtures of clay and other nonmetallics of the earth, and hardened by fire. Porcelain is a variation of pottery of unusual refinement, marked by hardness and low porosity. This description of the term "porcelain" is substantiated by the definition in the Unabridged Webster's Dictionary: "A fine ware differing from ordinary pottery in being translucent and in its superior whiteness, hardness, and sonority; called also china or chinaware." The definition of the word as an adjective: "Of, pertaining to, or made of, porcelain." Of course, these definitions are incorrect to the extent that translucency is not a prerequisite, but it further emphasizes the fact that porcelain has a "clay" body.

For these reasons, it seems to the members of the White Wares Division that the term "porcelain" as a noun or an adjective should apply to ware of the pottery type. Especially do we request that the Enamel Division do not use this word as a noun in naming their product.

We realize that for several years a large number of the enamel manufacturers have used the term "porcelain enamel," i.e., they used the word "porcelain" as an adjective, and that it would be very difficult to change from this practice. We regret that the use of the term "porcelain enamel" has become so general that a hardship would result from any changes. We especially urge that the Enamel Division go on record as insisting that the term "porcelain-enamel" be used only as a compound word and that any other use of the word "porcelain" in the enamel industry is misleading.

If we can keep from having any confusion between the various products included in the ceramic industries, we certainly will have a better chance of protecting all of our interests against the usurpation of our terms by the producers of products that are not ceramic.

I will appreciate consideration by the Enamel Division of the above suggestions and hearing from you with your opinions on this matter.

—JOHN W. WHITTEMORE, *Chairman*,
White Wares Division, 1944

Shaker Heights, Ohio
April 24, 1945

Dear Mr. Whittemore:

Since receiving your letter in which the request was made for the Enamel Division not to use the word "porcelain" as a noun in naming their product, I have discussed this matter with several members of the Division.

It was found that the terms "porcelain enamel" and "porcelain on steel" have been approved by the Federal Trade Commission. The term "porcelain" alone has not been approved and has been in court several times. Consequently, manufacturers and members of the Porcelain Enamel Institute should be aware of this situation and naturally would tend to avoid the use of terms which have not been approved.

This letter will be sent to various members in the Division so that any improper usage in isolated cases may be avoided.

—H. D. CARTER, *Chairman*,
Enamel Division, 1944

REPORT OF COMMITTEE ON PATENTS

All of the legislation pending before the 78th Congress expired with its adjournment. Accordingly, your Committee has had to consider only the bills that have been introduced since the new Congress convened in January. Although there are a considerable number of bills pending that affect patents, the following are those of most direct interest to The Society.

H.R. 97. This is intended to supplement the Clayton Act. Section 28 provides that every sale, assignment, or other conveyance of any patent or patent application or of any interest therein, every agreement relating to a patent, a patent application, or an interference proceeding, and every transfer of rights under a patent or patent application, whether by license or otherwise, must be embodied in a written instrument, a copy of which must be filed with the Attorney General within thirty days after its execution. Moreover, within six months after enactment of this section there must be filed with the Attorney General a true and complete copy of any agreement of the foregoing type which is in effect at the time of the enactment. Again, there must be filed with the Attorney General within thirty days after its execution a true and complete copy of any document relating to, modifying, canceling, or supplementing any of the foregoing instruments. The section provides a penalty of $500 for each offense and $25 for each day during its continuance.

This conforms in principle to one of the recommendations made by the first report of the President's National Patent Planning Commission which, however, proposed that these documents should be recorded in the Patent Office. The Patent Office is the logical and proper place for deposit of these instruments, rather than the Attorney General's office. Recording in the Patent Office would accomplish what is intended because the information would be freely available to the Attorney General.

The Committee expresses no opinion with respect to the civil penalty provided by the section. Apart from this and subject to recording in the Patent Office instead of depositing with the Attorney General, it is recommended that this section be approved in principle.

Section 29 provides that any use or nonuse of a patent or patent application, including the failure or refusal to grant licenses thereunder, which unreasonably limits or excludes the supply of any article from commerce, is to be illegal. Also, any sale, assignment, or conveyance of a patent application or patent, or of any interest therein, and every transfer of rights thereunder by license or otherwise that involves any restriction upon the price of any article handled in commerce and which is covered by such patent or patent application is to be illegal. The penalties are that the patent or patent application involved shall be invalid and anyone violating the section, or engaging in a conspiracy to violate it, shall be punishable by a fine not exceeding $5000 or by imprisonment for not more than one year, or both.

Section 30 provides that no criminal proceeding under Section 29 should be based upon actions that were completely disclosed in advance to the Attorney General and which he fails within ninety days thereafter to hold, by written opinion, to be in violation of Section 29.

The Committee feels that Sections 29 and 30 are unnecessary under the existing antitrust laws. It is therefore recommended that these two sections be disapproved.

H.R. 98. This is a bill that purports to protect the foreign relations and to protect the trade and commerce of the United States. Among other things, it provides for the registration with the Attorney General of copies of a wide variety of contracts involving foreign trade or relations with foreign companies including any assignment, license, cross license, or sublicense under any United States or foreign patent application, patent, registered trade-mark, or trade-mark application. For failure to do so there is a civil penalty of $250 for the first day of any such violation, and $25 for each succeeding day, and a criminal penalty of a fine not exceeding $5000 or imprisonment for not exceeding one year, or both, and, in accord-

ance with the bill, failure to register any such instrument by a foreign or domestic company shall be deemed to be a violation by the individual directors, officers, partners, or agents of the company who shall have authorized, ordered, or done any act constituting the violation in whole or in part, or who knowingly failed to have the contract registered when such action lies within the scope of their authority.

What was said relative to Section 28 of H.R. 97 applies to this bill insofar as it concerns registration of instruments affecting patents, patent rights, and trade-mark rights except that the Committee feels that the penalty for violation should be restricted to a civil remedy without any criminal action such as is embodied in the bill.

H.R. 718. In accordance with this bill any citizen of the United States who on December 7, 1941, was the owner or licensee of a United States patent, who was manufacturing or about to begin manufacture under such patent, and who after that date was unable to manufacture because of a shortage of materials, man power, or transportation difficulties, due to the war emergency, may have the term of such patent extended for a period equal to the period during which the inability to manufacture existed.

So far as is known, no hardships due to the war emergency have seriously interfered with the practice of patented inventions. The Committee feels that there is no necessity for this bill and that it would be unwise to enact it into law. Disapproval of the bill is therefore recommended.

H.R. 1178. This bill would eliminate from R.S. 4887 the provision that makes it necessary, in order to obtain a valid United States patent, to file in this country an application for patent within twelve months of the filing of the first application for foreign patent, or within six months in the case of designs.

No information is at hand as to the purpose of this bill. The statute (R.S. 4887) has acted fairly for many years, and no reason is seen to change this provision, which might very well create a hardship upon domestic inventors and equally create an unfair advantage in favor of foreign inventors. The Committee recommends disapproval of the bill.

H.R. 1439. This would amend R.S. 4886 to provide that in proceedings in both the Patent Office and the United States courts an applicant for a patent or a patentee shall not be permitted to establish a date of invention by reference to knowledge or use thereof in a country foreign to the United States other than the filing of a foreign application for patent for the same invention.

The purpose of this bill is to bring the practice in the Patent Office and in the United States courts into conformity. In the Patent Office in an interference proceeding the earliest date available for an invention made abroad is that of the filing of a foreign application not more than twelve months prior to the United States application; in the courts, however, in the case of such inventions the inventors are permitted to prove other acts which may, and usually will, antedate the filing of the foreign patent. There is thus a conflict of practice, and for a considerable number of years there has been a move to make the two practices consistent. The terms of this bill have been approved generally, and the Committee recommends that it be approved.

H.R. 2111. This bill is similar in purpose to the Nolan Act that followed World War I. It aims to preserve priority rights that have lapsed under our statutes by reason of conditions arising out of the war emergency. Its provisions are applicable only to citizens of the United States and to citizens of foreign countries which provide substantially reciprocal privileges to citizens of the United States.

There appears to be general approval of the principle of the bill, and of its terms in general. The Committee recommends that it be approved in principle.

—Fulton B. Flick, *Chairman;* Raymond E. Birch, and Charles F. Geiger

REPORT OF COMMITTEE ON AIR HYGIENE

There have been no specific problems presented to the Committee this year, hence its work has been largely that of the individual members.

The year past has witnessed a large increase in the number of companies using powdered aluminum treatment, both as a preventive and for alleviation of silicosis. This treatment was fully reported at the 1943 Annual Meeting by Dr. J. W. G. Hannon. The paper was presented before the Refractories Division (abstract on page 98 of the April, 1943, *Bulletin*). A similar paper has been published by Dr. Hannon under the title "Aluminum Therapy in the United States" (see *Trans. Can. Inst. Mining & Met.*, **47**, 180–84 (1944); abstract on p. 130, July, 1944, *Ceramic Abstracts*). Other papers appeared in this same report of the *Transactions*. It is understood there are now eighty of these aluminum powder machines in use.

An increasing number of companies are making use of X-ray examination on both old and prospective employees to determine whether treatment is indicated or where best to place the employees.

The Health Departments of some states have made or are undertaking or contemplating surveys of the dust conditions in industrial plants, coupled with complete physical examinations and an attempted correlation. Such a survey is now under way in the refractories industry in Kentucky. It is also understood that the potters of Ohio are conducting an elaborate survey. Some manufacturers are equipping themselves to make dust counts and other studies of plant conditions which make housing of crushing, grinding, or other machinery advisable.

It is recommended that an attempt be made to obtain a summary of recent legislation on occupational diseases from the Industrial Hygiene Foundation either for presentation at the next general meeting of The American Ceramic Society or for publication in *The Bulletin* at an earlier date. Such a summary was presented by Theodore C. Waters at the Annual Meeting of The Society in 1940 (paper published in the April, 1941, *Bulletin*, pp. 126–30), and it could well be repeated at intervals of about five years.

—Fred A. Harvey, *Chairman*

THE AMERICAN CERAMIC SOCIETY, INC.

Maturity Value of Invested Reserve

The following bonds are in The Society's Safety Deposit Box:

(1)	1	Savings Certificate	$ 3,000.00
(2)	2	U. S. Treasury Bonds	200.00
(3)	6	U. S. Savings Bonds, Series B—1936	2,750.00
	7	U. S. Savings Bonds, Series C—1937	4,150.00
	3	U. S. Savings Bonds, Series C—1938	3,000.00
	5	U. S. Savings Bonds, Series D—1939	5,000.00
(4)	6	U. S. Savings Bonds Series G—1941	6,000.00
	8	U. S. Savings Bonds, Series G—1943	8,000.00
	4	U. S. Savings Bonds, Series G—1944	12,000.00
	2	U. S. Savings Bonds, Series G—1945	2,000.00

The total par value of all bonds in the Safety Deposit Box *at maturity* follows:

(1)	Savings Certificate	$ 3,000.00
(2)	Treasury Bonds	200.00
(3)	U. S. Savings Bonds, Series B, C, and D	14,900.00
(4)	U. S. Savings Bonds, Series G	28,000.00
	Par Value, Grand Total	$46,100.00
	Value as of March, 1945	$44,169.93

—John D. Sullivan, *Treasurer*

REPORT OF COMMITTEE ON SECTIONS AND DIVISIONS

The activities and accomplishments of this Committee for 1944 were as follows:

(1) New Sections

Two new Sections were organized and received their charters. These are known as the Northwestern Ohio, based on Toledo, and the Northern Ohio, based on Cleveland. Both are headed by active and interested officers and, as they are located in areas where there is quite a large ceramic population, prospects for continuance are excellent.

(2) Reactivated Sections

Owing to the exigencies of war, particularly as it has affected personnel and curtailed automobile traveling, several of our older Sections were not functioning at the beginning of the year. Steps were taken to remedy the situation, and it is a pleasure to report that the St. Louis Section and the Central Ohio Section are again holding regular meetings. It might be noted here that the Michigan Section and the new Northwestern Ohio Section were formerly a single Section. The decision to break up this area into two Sections should prove to be beneficial as each Section has sufficient membership possibilities to give strength and permanence. The present Michigan Section, however, is below par and more work needs to be done here to bring it up to the level of activities of other Sections.

(3) Surveys

Surveys were made of the New England and West Virginia areas to ascertain whether or not there was a chance of starting work on new Sections there. It was decided that a fertile area for new Section development should have a minimum of fifty Society members within a radius of fifty miles of some central point. Neither of the above locations met this requirement.

(4) In Process

Active work is under way toward the formation of new Sections based on Cincinnati, Ohio, and Trenton, N. J. There is nothing definite to report at this time. The chances that Sections will be established here early in 1945 are good.

(5) New Divisions

Late in the year, the possible need for a new Division for those interested in thermal insulation was brought to the attention of this Committee. A survey of the situation is under way and it is hoped that sufficient information can be assembled by late spring to decide what should be done.

(6) State Associations

Although the formation and supervision of state associations is outside the activities of The Society, The Society does, so this Committee is informed, give encouragement and moral support to such new developments. The proposed Pennsylvania Ceramic Association should be given all help possible.

(7) Other Activities

A suggestion received by this Committee that it might be advisable to break up the Baltimore-Washington Section into two Sections was studied. After a careful survey, it was decided that no benefit would be derived from such a change.

Another suggestion made to this Committee was that in localities where the membership concentration did not meet the yardstick setup for the formation of a Section, sub-Sections or ceramic clubs might be formed. The adoption of such a program would probably necessitate some minor change in our By-Laws and/or Rules. A trial of this idea, however, is to be made at Wheeling, W. Va., where the formation of such a group is under way. There are quite a few areas in the United States where interest in ceramics can be encouraged and spread should such a plan prove to be worth while.

(8) Financial Aid to Sections

This Committee does not believe that a discretionary contribution of up to one hundred dollars to any Local Section, as recently approved by the Board of Trustees, is the proper answer to the problem of financial aid to Sections. It is still of the opinion that its original proposal of a "kickback" to the Sections of a definite amount of the annual dues to The Society from each member who is a member of a Local Section, together with a greater "kickback" of the first year's dues of any new member of The Society from a Local Section's roster, is the best solution to this question.

The method suggested is sound because the officers of a Local Section will know in advance what the basic income of the Section will be and with a tangible amount of money to work with they can better plan their yearly activities. It is sound because the members of a Local Section will realize that the easiest way to increase the Section's income is to obtain more members for The Society. It is sound because it will aid in increasing the membership of The Society, thereby increasing revenues and expanding the scope of The Society. It is sound because the experience of other national societies similar to ours has shown the foregoing to be true.

It is respectfully requested that the Board of Trustees reconsider this matter.

—C. C. TREISCHEL, *Chairman*

REPORT OF COMMITTEE ON IMPROVED COOPERATIVE RELATIONS BETWEEN THE AMERICAN CERAMIC SOCIETY AND ITS LOCAL SECTIONS*

The Pittsburgh Section of The American Ceramic Society wishes to recommend the following program, grouped under five main heads, to the national organization for its closest consideration, approval, and adoption.

I. Recognition of Increased Importance of Local Sections to The Society

(*A*) It is recommended that the Standing Committee on Sections and Divisions be discontinued and that three new standing committees be established as follows: (1) Committee on Sections, (2) Committee on Divisions and Classes, and (3) Committee on Student Branches.

(*B*) The Committee on Sections should be composed of the chairmen of all Local Sections, the chairman of the Committee to be chosen by the Board of Trustees. At some time in the future, in order to present the opinions and policies of this important group more effectively in the national organization, consideration should be given to according one or more of its representatives full membership on the Board of Trustees.

This Committee will schedule a meeting at the Annual Meeting for the discussion of mutual problems, such as programs, finances, etc., to which all Local Section officers and others interested should be invited.

II. Financial Aid to Local Sections

(*A*) It is recommended that the national Society advance to each Local Section $1 for each paid-up member of the Local Section (as of a certain date, e.g., April 30) who is also a paid-up member of the national organization, no financial credit being given at this time for corporation, student, or junior members.

(*B*) In addition, at the discretion of the Executive Committee, a maximum of $100 annually may be spent to aid any Local Section. (This is similar to a motion passed

* Committee appointed March 13, 1945. See Pittsburgh Local Section notice, p. 148, April, 1945, *Bulletin*.

at the December 8, 1944, meeting of the Board of Trustees; see the January, 1945, *Bulletin*, p. 24.)

III. Program Assistance to Local Sections

(*A*) It is recommended that each Local Section receive at least one annual visit from a representative of the national Society.

(*B*) Each Local Section is to receive aid (when requested) from national headquarters in lining up speakers and improving its programs. Tours for speakers of prominence might be arranged through the national office.

(*C*) The standards of the Local Section programs are to be stimulated and elevated by publishing the best talks in The Society publications. As a corollary, The Society controls the right of publication over papers presented before the Local Sections, and they can be released for publication elsewhere only by the national Society.

(*D*) Each Local Section should be encouraged to have each Division and Class (where possible) represented on its Program Committee.

IV. Greater Utilization of Publication Facilities of The Society

It is recommended that Local Section publicity in *The Bulletin* be further encouraged and expanded, particularly with regard to announcements as to future meetings, plans, etc. Local Sections should provide full reports of meetings, activities, etc., to the Editorial Offices through the Secretary or some other representative appointed for that purpose. Perhaps a limited amount of personal news involving professional activities should be included.

V. Adoption of Suitable By-Laws by All Sections

A standard set of By-Laws for all Local Sections does not appear to be feasible. It is recommended therefore that the Committee on Rules of the national Society in its suggested By-Laws identify those articles, paragraphs, or clauses which must be adopted by each Local Section for the sake of conformity with the Constitution and By-Laws of the national Society, leaving the adoption or modification of other portions of the suggested By-Laws to the discretion of the Local Section. The concept of a set of By-Laws for each Section is indorsed.

—A. PAUL THOMPSON, *Chairman;* FRANCIS C. FLINT, E. H. FRITZ, J. S. GREGORIUS, THEODORE LENCHNER, W. KEITH MCAFEE, RALSTON RUSSELL, JR., E. W. TILLOTSON, A. A. WELLS, AND H. E. SIMPSON, *ex officio*.

REPORT OF COMMITTEE ON RULES

Prorating of Dues

The Committee on Rules reports that the following changes have been made in the official documents of The Society:

Article B V, Section (2), of the By-Laws and Article R V, Section (2), of the Rules were amended to provide for prorating dues for new members joining during the second quarter of the year or later. This privilege had formerly been accorded only to new members joining during the third and fourth quarters.

Fellows

The members of the Fellowship, by letter ballot, decided to recommend the discontinuance of that suborganization of The Society as an autonomous group. Under this authority, the Dean of Fellows presented proposed amendments to the Constitution of The Society under the terms of Article XV, Section (1), thereof. This petition was approved by the Board of Trustees and was published in *The Bulletin*.* If The Society so instructs, when the proposed amendments are submitted to the Annual Board of Trustees' meeting in Buffalo, they should then be submitted to all the voting members in letter ballot.

The proposed amendments would change our Article III (1) (*c*) and delete all of Article IX. If a two-thirds majority of those voting by letter ballot approve these amendments, they immediately become effective. The Board of Trustees will then be authorized to make such changes as it deems proper to bring the By-Laws and Rules of The Society in conformity with the amended Constitution. They should also make new provisions for the election of future Fellows and to continue such of the former activities of the Fellowship as they think proper.

Class Elections

The several amendments to the By-Laws and Rules having to do with including the Class elections in the single ballot and requiring members of Local Sections to be members of The Society in order to have the right to hold office and vote have been prepared for action by the Board at its Buffalo meeting April 16, 1945.

Our two Classes have not yet changed their respective Rules to provide for the change in election procedure. The Institute of Ceramic Engineers cannot amend its Rules until it holds a meeting. The Ceramic Educational Council, under the terms of its Rules, may make amendments by mail. It is planning to do so promptly.

—W. KEITH MCAFEE, *Chairman*

* See *Bull. Amer. Ceram. Soc.*, **23** [10] 389 (1944) and **24** [5] 182 (1945).

For Society Constitution, By-Laws, and Rules, see *ibid.*, **17** [10] 385–93 (1938).

REPORT OF COMMITTEE TO CONSIDER ENDOWMENTS FOR CERAMIC PROMOTION

The Committee appointed by President Fritz to consider the matter of endowments for ceramic promotion met in Pittsburgh, January 27, 1945.

The Committee held a lengthy discussion. They gave careful and detailed consideration to the various benefits that could be expected from endowments for ceramic promotion. They also considered ways and means for raising and investing funds.

After due and careful study of this problem, arising from a suggestion outlined in an editorial in *Ceramic Industry*, the Committee issued a rather lengthy and detailed report to President Fritz with copies to General Secretary Purdy and President-Elect Tefft.

The Committee's findings are on file for any one concerned.

Briefly, the Committee recommended that the plan be tabled for the present for various reasons.

Perhaps the most important reason is that the earning power of invested capital is too limited to yield a net return that would be adequate to accomplish the desired results. A second important reason is that the various promotions and research problems would of necessity have to be outlined before various companies would be willing to invest in the undertaking.

The Committee's report deals pretty much in detail with many phases of this problem and those interested should read the original report.

Summary of January Meeting

This meeting of the Committee was called by E. H. Fritz, President of The American Ceramic Society, to consider research endowment for The American Ceramic Society. It was held the afternoon of January 27, 1945, at the Hotel William Penn, Pittsburgh, Pa.

It is the considered opinion of this Committee that a research endowment would direct considerable attention away from the real interest of The Society, because the direction of it would be necessarily delegated to a few. The amount of money involved would be sufficient to influence the attitude of the organization.

The active interest of the members is assisted by the work of a large constantly changing body of men either in

organization work or contributions to science and technology which The Society disseminates.

A number of years ago, one-third of a million dollars at 6% would have given about $20,000 income per year, which would have been sufficient to do considerable research. Under present conditions, it will be difficult to conserve an endowment of more than $300,000 and maintain at the same time an interest rate of 2% which would give about $6000 per year, or about enough to pay one director of research for the program.

It would be far better to apply to the corporations, who are interested in the Society, for $6000 each year for four fellowships than to ask them, particularly in these changing times, for one-third of a million dollars.

This has been done particularly when a specific research is in consideration. It is always better to have a real program first and to ask for the money afterward, than to ask for a lot of money first and then find the program, even though there is a general feeling that a good program is available. This is axiomatic.

Considering the problem more deeply, "What is the function of the technical society?" By definition, The American Ceramic Society is organized "to encourage and disseminate knowledge of the science and technology of ceramics." The bringing of an endowment into this definition is making it rather broad.

Endowment funds are in the opinion of the Committee headed for extinction. Witness the difficulty the American colleges are having. The amount of interest that is obtainable on invested capital does not make endowments interesting any more. Any number of colleges, which are quoted because they are facing this change, are constantly beginning to work on a fiscal collection basis. This is the same problem that insurance companies are facing.

The Committee is of the opinion that instead of an endowment The American Ceramic Society should try to maintain a good reserve in The Society for the lean years. They are recalling the fact that years ago The American Ceramic Society was one of the few who had a reserve, and it is to Ross Purdy's credit that we had it. That reserve carried us over the lean years of the depression, and again Ross Purdy and the Finance Committee are to be congratulated for bringing up a good reserve while our temporary good luck in membership gives us the opportunity. A society of our present size should have at least a $100,000 backlog with which to carry on. It then becomes incumbent on the Board to be more farsighted than most institutions, churches, and Government boards are in preserving that money for its true purpose and not handing it out for temporary or superfluous ideas. This is mentioned because, although The American Ceramic Society's Board has not done this, it has been quite conservative. The present attitude on spending in the nation is such that pressure will be brought to bear to take the easy path and use it up.

If we really want to inaugurate a research program we can cooperate with institutions such as Armour, Battelle, and Mellon, or with the colleges, or with the Government and state laboratories. Quite often, some of these want aid and guidance in choosing or furthering a program.

The American Ceramic Society has a Research Committee that could advise these institutions without offering financial aid. The American Ceramic Society is divided into various Divisions with specialists in these fields. They could help not only present institutions such as the United States Potters Association, the Porcelain Enamel Institute, etc., but they could give the cooperation and coordination which The American Ceramic Society is so well fitted to do. We are probably in a better position to guide these people in general and pure research problems than anyone else, and these associations, institutions, and companies are in better financial position to handle our problems then we would be, because we would have to obtain the money and, in so doing, every company or association would want to know the particular benefits. They always do, even though they are not selfish in their attitude.

The American Ceramic Society covers too much territory both geographically and intellectually to satisfy the whole group by picking a few problems for spending of its own money. It should guide these various groups and coordinate their common problems as it is doing now in the Meetings. Witness for instance the common bond of fellowship of the Divisions, the vitreous phase.

We would not need a technical editor. In the first place, we would have a choice, being sufficiently expert in all our Divisions and in science, engineering, and art. Our present setup of Editorial Committees functions well with the editorialship in the home office guiding the formalities (and sometimes the spelling).

A technical secretary might be a different story. If we obtain one, he should differ from a business secretary. He should know science and technology in all fields. He should be able to help guide the obtaining and allocating of money and the execution of research. If such a man were paid $6000 instead of receiving an endowment for his salary from a one-third of a million, he should be paid out of annual dues and should be added to the staff with the idea that The Society has reached a stage where this type of secretaryship would be considered a valuable additional service to the association.

This brings up the broader question, "Do we want an endowment?" Mr. Fritz, however, wishes a study on the best way to augment the services of The Society to its membership. A technical secretary would be in reality the executive head of the Research Committee of The Society. His functions would be to guide the group. A man of such high caliber would be more directly concerned with research and if he were adequate might demand more than $6000. It might be better for the Board to decide to allocate funds to the Research Committee to facilitate their work.

It would then be necessary for the President definitely to pick someone with the time and interest necessary to accomplish this purpose. It may be that the President with the help of the Committee could better define in more concrete terms this Committee's work. It may be that the work would be sufficient to warrant The Society's giving the Committee a paid secretary. The success of the whole project would depend on ample facilities for a well-chosen chairman, just as the success of the technical secretary's work would depend on his personal ability. Probably the research chairman should be chosen with an idea of the degree of permanence in his appointment.

This research problem, be it an endowment, an institution, a secretary, or augmentation of the work of the Committee, is one phase and a very necessary one of the expanded and exhilarated activities of The Society. It is true that something of this kind might well be done, for we are obligated with more members than ever to offer them more to keep their interest. Salesmanship for membership automatically implies the insufficient quality or quantity of service to bring in the members.

The Committee also discussed possibilities of more practical papers or meetings for the help of those members who are not so highly scientific. This is a broader phase of the subject than the Committee should discuss.

The Committee also discussed outside of its own field the decision to raise the dues for corporations. It is their opinion that the raise in dues will be liable to eliminate a number of borderline members which would normally offset those who could afford the increase. This need not be gone into by this Committee.

—Victor V. Kelsey, *Chairman;* Arthur A. Wells, and Francis C. Flint

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Further Committee reports will be published in the July issue of The Bulletin.

LOCAL SECTION NEWS

NORTHWESTERN OHIO SECTION

The first annual meeting of the Northwestern Ohio Section of The American Ceramic Society was held at the Toledo Yacht Club at 6:30 P.M., April 25, 1945. A. H. Couch presided. Eighty-three dinner guests enjoyed an excellent chicken dinner.

Donald E. Sharp introduced the principal speaker of the evening, F. C. Flint, Chief Chemist and Director of Research of the Hazel-Atlas Glass Co., Washington, Pa., and Past-President of The American Ceramic Society. Mr. Flint gave an interesting talk on "Glass, a Summary of Its Development as an Art and as a Science." The program was concluded with the Libbey Glass Company film "Blowpipes."

The Section Rules adopted by the Organizing Committee March 2 were read by Chairman Couch and ratified by the assembly.

Officers of the Section elected by the Organizing Committee March 2 were introduced. (For March meeting notice, see the April, 1945, *Bulletin*, p. 148.)

The Program Committee consists of H. H. Holscher, *Chairman;* Robert Twells, V. W. Boeker, and F. G. Schwalbe.

The Publicity Committee consists of V. W. Boeker, *Chairman;* H. A. McMaster, and other members to be appointed.

The Membership Committee chairman has not yet been named.

Tentative programs for next year's meetings were outlined.

C. S. Pearce, Associate Secretary, The American Ceramic Society, commented on the successful launching of the Northwestern Ohio Section and told of tentative plans for financial aid to Local Sections from the parent Society.

Dues of $1 per year fixed by the Executive Committee were announced and members were solicited.

—HAROLD A. MCMASTER, *Secretary*

NORTHERN OHIO SECTION CONCLUDES FIRST SEASON

One hundred and forty-five persons attended the meeting of the Northern Ohio Section May 11, 1945. It was held at the Cleveland Museum of Art, with special reference to the exhibits of ceramic art in the annual May Show presenting the work of Cleveland artists, including several of our members.

The program was arranged by Alice A. Ayars of the Ceramic Center of the Cleveland public schools. She introduced William M. Milliken, director of the Museum, who spoke on "Ceramics of the Past and Future." His talk gave an insight into experiences incidental to the Show, such as the tardy entrant whose pottery vase was delivered still too warm to handle, having just been taken from the kiln; and the neophyte whose entry "exploded" in the storage room, apparently due to unrelieved stresses.

There was an interesting demonstration of a lesson in ceramic art, as given before fifth- and sixth-grade pupils in the Cleveland public schools. This comprised a recording, narrated by Miss Ann Horton of the Cleveland Museum of Art staff, as received in the schools via WBOE, the Board of Education radio transmitting station. The recording was accompanied by slides illustrating the narrative. The slides, showing Miss Ayars' work in the Ceramic Center, were prepared in the Visual Aids Department of the Board of Education.

The meeting, the fifth this season, brings to a close our first year. The initial program planned for the autumn will feature a symposium of papers which were to have been presented at the Buffalo Meeting.

—EDWARD M. SARRAF, *Chairman*

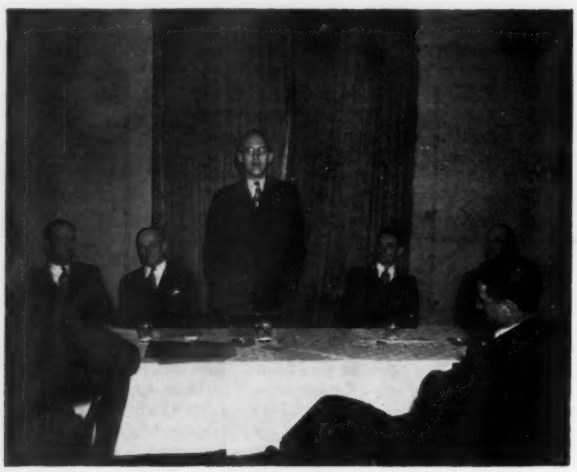
ST. LOUIS SECTION

The St. Louis Section held its Spring meeting at the Forest Park Hotel, St. Louis, Mo., May 10, 1945.

After a fine dinner served to sixty-one members and guests, Chairman H. H. Hanna introduced L. E. Puntney, Laclede-Christy Clay Products Co., St. Louis, Mo., who gave an interesting talk on "Prospecting for and Testing of Clay Samples from Missouri Clay Deposits." Various methods were described for drilling test holes and testing the clay samples for quality and suitability for use in the manufacture of refractories.

J. E. Hansen, director of service of the Ferro Enamel Corp., Cleveland, Ohio, and Vice-President of The American Ceramic Society, gave a paper on "Resistance to Corrosion of Porcelain Enamels." Various types of corrosion were described, and some of the manufacturing precautions which must be taken to assure maximum resistance to corrosion were pointed out.

C. S. Pearce, Associate Secretary of The Society, commented on the importance of maintaining active Local Sections, particularly when travel is restricted.



J. E. Hansen (*center*) speaking before St. Louis Local Section. Seated at speaker's table (*left to right*): J. L. Crawford, H. H. Hanna, L. E. Puntney, and H. W. Meyer.

A committee composed of L. C. Hewitt, *Chairman;* P. G. Herold, J. L. Crawford, and R. S. Bradley presented a set of Rules for the Section patterned after the model Rules suggested by The Society. These Rules were approved.

A Nominating Committee consisting of H. M. Tostlebe, *Chairman;* P. S. Trowbridge, and P. F. Gutmann presented the following slate of officers for the next two years. These officers were duly elected.

Councillor: H. H. HANNA, Pittsburgh Plate Glass Co., Crystal City, Mo.

Chairman: H. W. MEYER, General Steel Castings Corp., Granite City, Ill.

Vice-Chairman: L. E. PUNTNEY, Laclede-Christy Clay Products Co., St. Louis, Mo.

Secretary: V. E. WESSELS, Missouri Portland Cement Co., St. Louis, Mo.

Treasurer: L. H. KOERBER, Hydraulic Press Brick Co., St. Louis, Mo.

After the business meeting, an interesting sound and color film portraying the development of the processing of aluminum metal was shown.

—V. E. WESSELS, *Secretary*

See p. 227 for more Local Section News

THE PRESIDENT'S PAGE

It is with deep appreciation of the great honor as well as the grave responsibility of the office that I enter into the presidency of The American Ceramic Society. Last year's President, Edwin H. Fritz, upheld the high standard set by his predecessors. To match his record will be an achievement, but with properly coordinated teamwork on the part of the entire membership, I am confident that our Society can continue its growth and its service.

The American Ceramic Society is strong and healthy only because it fills a definite need for those who are engaged in ceramic development and that covers a very wide field of activity. Surely it is not taking too much credit for The Society to say that much of the present advancement in ceramic technology could not possibly have been reached without the exchange of ideas made through the medium of The Society meetings and publications.

How many institutions were teaching ceramics forty-seven years ago when a small group of forward-looking men started this organization? At that time, only Ohio State University had a course in ceramic technology. Now there are twenty-six colleges and universities teaching ceramics. Surely the exchange of information by this small group of Charter Members of our Society has had much to do with the growth of teaching ceramics in our great universities. Had these men not been farseeing enough to exchange information about the science of making commercial ceramic ware through proper forming and then firing of clay bodies to the right temperature or of blending minerals that, when heated and controlled through processing and cooling, would produce world-famous glass, the interest necessary to promote ceramic education would have been much slower in its development.

Who, also, would say that many of the ideas that have revolutionized the processes in various types of ceramic products were not the outgrowth of articles presented at our meetings and published in our *Journal* or *Bulletin*, or of some discussion growing out of friendly contacts, resulting from membership in The Society?

Truly The American Ceramic Society is doing a great work in fulfilling its aim of service to members. If we let down even a little in our endeavor, the whole ceramic field will be the loser. Instead of letting down we must extend our usefulness. This is the belief of your Board of Trustees, your officers and committeemen, as well as Ross Purdy, Charles Pearce, and all other home office personnel. Otherwise, they would not have been selected for their respective positions.

But, let's go further than that. It is a privilege to belong to this great Service Club, and this privilege carries with it a responsibility—the responsibility of growing through helping others grow. Not all ideas are entirely foolproof, but if we are given the opportunity to sort out the best ideas for our needs from suggestions contributed by five thousand members we shall progress much more rapidly than if the membership were only twenty-seven hundred, as it is at present. Why then should not every member get another member? The "Double the Membership" campaign started by President Bales two years ago must continue as one of our major activities. Ralston Russell, Chairman of the Membership Committee, is doing a splendid job of organizing for this work. He will tell us of his plans throughout the year. Let's get back of him because we will be backing ourselves with an investment in our own growth.

C. Forrest Tefft, President, The American Ceramic Society

There is another responsibility to The Society which I believe all members should accept seriously. It is one of putting in a letter addressed to your President your constructive criticism of The Society's activities. Every member must at some time have thought of some service that he would like to have performed by The Society. Some may even have pet "peeves" and these will be given consideration if brought to the attention of the Executive Committee who, in turn, will present them to your Board of Trustees. Your management is urging you to act now and send in your suggestions for improvement in Society activities.

GROWTH COMES THROUGH COOPERATION
LET'S MAKE 1945 A CERAMIC SOCIETY YEAR

—C. FORREST TEFFT, *President, 1945–1946*

CERAMIC SCHOOL NOTES

RUTGERS UNIVERSITY

Lt. John H. Koenig

J. H. KOENIG NEW HEAD OF RUTGERS DEPARTMENT OF CERAMICS

Lt. John Henry Koenig, USNR, has been appointed head of the Department of Ceramics at Rutgers University, New Brunswick, N. J., and will fill the position held by the late George H. Brown.

Lt. Koenig, who is well known in the ceramic industry, was born in St. Marys, Ohio, April 9, 1909. He received his undergraduate training in chemical engineering at Ohio State University, Columbus, Ohio. Following graduation in 1931, he was engaged for several years as research engineer for the General Electric Co., Pittsfield, Mass., and then returned to his alma mater for graduate study in ceramics. This work entailed an extensive program of research and was done under a fellowship of the U. S. Potters Association at the Ohio Engineering Experiment Station. In addition to a doctorate, Lt. Koenig also holds a professional degree in chemical engineering. Before his assignment in the Navy, he was with the Hall China Co., East Liverpool, Ohio, as director of research.

Lt. Koenig is prominent in The American Ceramic Society, having been elected a Fellow in 1942. He is also a member of Keramos, the Institute of Ceramic Engineers, and Sigma Xi. He has contributed a number of technical papers to ceramic literature and is co-author with W. H. Earhart of the book entitled Literature Abstracts of Ceramic Glazes.

At present, Lt. Koenig is on duty at the Bureau of Ships, Navy Department, in Washington, D. C. He will be on leave of absence from the University until after the war.

DEPARTMENT OF CERAMICS ESTABLISHED AT UNIVERSITY OF TEXAS

A $250,000 program for the establishment of a department and research bureau for the study of ceramics has been endorsed by the Board of Regents of the University of Texas in response to a growing demand for an instructional department to aid in the development of the great potential field of ceramics in the southwest.

The plan for the establishment of the Department of Ceramics, submitted by F. K. Pence, director of the program of ceramic research which has been functioning at the University under the Bureau of Industrial Chemistry since 1940, calls for a legislative appropriation of $125,000 for the coming biennium for operation and maintenance and a $125,000 appropriation from the University fund for a new building.

The Department will offer an instructional curriculum in ceramic engineering closely correlated with a bureau of ceramic research, which will have as its central feature a production laboratory. Tentative plans for the production laboratory propose a one-story building 100 by 200 feet, designed to support additional floors. One side would be given to the development of pottery production, decorating, glazing, tableware, etc., and the other side would be for structural ware, refractories, tunnel kiln, etc. Storage bins would be placed at one end of the building, and office space, seminar and lecture room, as well as record space, would be at the other end.

In addition to being a proving ground for new products, the laboratory will train students in the operative details necessary to their fabrication.

The program has been backed by clay products manufacturers and was supported before the Board by J. E. Fender, president of the Acme Brick Co., Fort Worth, Texas, and president of the Structural Clay Products Institute, Washington, D. C.

BLACK MOUNTAIN COLLEGE SUMMER ART INSTITUTE

The Black Mountain College Summer Art Institute will be held July 2 to September 8, 1945, at Black Mountain College, Black Mountain, N. C.

The following teachers and lecturers will participate: Gropius and Beidler, architecture; Feininger, Hillsmith, and Motherwell, painting; Zadkine and Mary Callery, sculpture; Paul Rand and Alvin Lustig, advertising art; Alexander Dorner and Karl With, art history; Berta Rudofsky, leather work; Mary Gregory, wood working; Anni Albers, textile design; and Josef Albers, basic design and color.

Although no course in ceramics is being featured, Professor Zadkine is qualified to give assistance in ceramic work.

Further information concerning the Institute may be obtained by writing to Professor Josef Albers, Art Department, Black Mountain College, Black Mountain, N. C.

The Black Mountain College Music Institute will also be held at this time.

TITANIUM ALLOY FELLOWSHIP AT RUTGERS

The Titanium Alloy Mfg. Co., Niagara Falls, N. Y., has provided the William F. Meredith Fellowship at Rutgers University, New Brunswick, N. J., in organic chemistry.

The Fellowship student is Harold Heine, under Associate Professor Henry L. Van Mater, who acts as a consultant for Titanium Alloy. Morris Cohen, associate professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., also acts as consultant. Scholarship aids and assistantships have also been provided in ceramic engineering at the University of Illinois.

NATIONAL RESEARCH COUNCIL

Committee on the Geology of Ceramic Raw Materials

A Committee on the Geology of Ceramic Raw Materials has been appointed with the following members: Herbert Insley, *Chairman;* G. W. Morey, C. S. Ross, and R. B. Sosman.

The Committee has suggested that the most effective method of beginning operations in this field might be the sponsoring and editing of a compilation of reports on the ceramic raw materials. These reports would be written by specialists in each branch of the ceramic industry and issued in book form, with references to the most important books on each subject.

The Committee feels that such a book would be useful where (1) the present supply of raw materials is limited and new sources are being sought, (2) a substitute raw material is desired in place of the material now used, or (3) the geological relations of a known but unexplored deposit might indicate how extensive and uniform it may be expected to be.

The book would not attempt to cover the economics of mining, or preparation for use, nor would it attempt to cover materials which are used in large quantities in other industries and only in relatively small amounts in the ceramic industry.

SOCIETY MEMBERS AT TITANIUM ALLOY

Anticipating postwar requirements, the Titanium Alloy Mfg. Co., Niagara Falls, N. Y., recently expanded its research and laboratory facilities and technical staff.

The following members of The American Ceramic Society are included in the new setup.

CARL E. CURTIS is development engineer. He was formerly director of research for the Simonds Worden White Co., Dayton, Ohio, and for the American Crucible Co., Shelton, Conn.

J. S. GEIGER is research associate. He was formerly chief ceramic engineer for the National Tile Co., Anderson, Ind.

GILBERT H. JEFFERY is doing field development work in the New York district. He was formerly with Isolantite, Inc., Belleville, N. J.

JACK G. MERRIAM is a member of the sales force in the Detroit area with headquarters in Toledo, Ohio. Before this assignment, he was engaged in laboratory work at the Niagara plant and was with the Bureau of Mines.

HAROLD D. PRIOR is in charge of the New York sales staff. He was in the Niagara plant laboratory for eight years.

MODERN GLASS FACTORY IN IRAQ

The first glass factory operating in modern times has been opened in Baghdad. Although this city lies close to the region where the art of glassmaking is supposed to have originated, glass has not been made there for centuries.

The plant was constructed by native labor and the machinery was built by local mechanics. Cullet, which has been collected by the government for a long time, is being used in the new plant.

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Citric Acid	Sodium Hydrosulphide	Titanium Tetrachloride
*Copperas	Stripper, Textile	

(*Items marked with * or are sold on West Coast only.)

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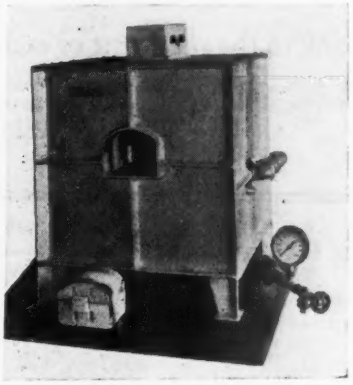
(1945)

REMMEY LABORATORY KILN No. 2150
Write for Bulletin F-2



FEATURES

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CORPORATION MEMBERSHIP

Corporation membership in The American Ceramic Society has reached a high point in the past few months. It has doubled in five years. It is positive evidence of the increasing interest by management in the technical phases of the ceramic industry.

In this issue of *The Bulletin* is a list of the Corporation Members and a short description of their services or products. This is a list of the leaders of the industry—leaders in technical thought—but why should it contain only 400 names when there are more than 4000 manufacturing plants in the ceramic industry and at least 1000 supplying companies?

Probably 4600 companies have not been reached with information about The Society and the service which it renders to those in the industry. That is a large field for membership solicitation.

You know several of these companies. Why not send an application blank to the president of each company today?

PAID MEMBERSHIP AND SUBSCRIPTION RECORD

Date of Record	Members Paid		Deferred	Subscriptions	Monthly Sales	Total Circulation
	Personal	Corporation				
May 21, 1944	2061	361	4	570	220	3216
December 21, 1944	2317	402	2	661	220	3602
January 21, 1945	2368	404	3	670	220	3665
February 21, 1945	2409	408	2	688	220	3727
March 21, 1945	2103	391	3	647	220	3364
April 21, 1945	2238	400	3	598	220	3459
May 21, 1945	2298	405	1	616	220	3540
12-month % increase	11.5%	12.2%		8.1%		10.1%

NEW MEMBERS IN MAY

Corporation

*AMERICAN RADIATOR & STANDARD SANITARY CORP., H. S. Magid (voter), Box 907, Trenton 5, N. J.

CLAYTON & LAMBERT MFG. CO., Charles F. Lambert (voter), 11111 French Rd., Detroit 5, Mich.

PRETORIA GLASS WORKS, I. Donen (voter), Box 863, Pretoria, South Africa.

PUERTO RICO CLAY PRODUCTS CORP., W. J. Stubbins (voter), Box 4083, San Juan 20, Puerto Rico.

Personal

ARADINE, PAUL W., Taylor Instrument Cos., Box 110, Rochester 1, N. Y.; chemist.

BENTON, GEORGE A., Genesee Feldspar Co., Rochester 12, N. Y.

*BUCHANAN, J. ROSS, Mayer China Co., Beaver Falls, Pa.

CHASE, DANA, 360 N. Michigan Ave., Chicago 1, Ill.; editor and publisher of the Dana Chase Publications.

CORTINA, JAIME, Apartado 25 Colonia Industrial, Mexico, D. F., Mexico; general manager, Nueva San Isidro, S.A.

HALL, E. B., 71 The Park, Ishapore, Bengal, India; assistant works manager, Indian Ordnance Service.

HOGAN, THOMAS W., 276 S. El Molino St., Pasadena 5, Calif.; Wilson Ceramics.

KENDRICK, THOMAS B. E., United States Glass Co., Glassport, Pa.; superintendent.

KRETSCHMAR, ERNEST, 835 Oleta Dr., Clayton, Mo.; Electro-Phos Slag Co.

MARVIN, PHILIP R., Milwaukee Gas Specialty Co., Box 461, Milwaukee 1, Wis.; director of research.

OWEN, J. D., R. Fowler, Ltd., Fitzroy St., Marrickville, Sydney, N.S.W., Australia; chief chemist (membership formerly in name of Thomas Campbell).

PEARSON, EDWARD P., Basic Refractories, Inc., Maple Grove, Ohio; director of research.

PEI, V. K., 169 E. Fourth St., Corning, N. Y.; Corning Glass Works.

POND, MARVIN H., 48 W. School St., Westfield, Mass.; ceramic engineer, Cortland Grinding Wheels Corp.

SNEAD, JANE, 1822 Chestnut St., Philadelphia 3, Pa.; Jane Snead Ceramic Studio.

SWINNEY, L. A., Robinson-Houchin Optical Co., 79 Thurman Ave., Columbus 6, Ohio.

TRIVEDI, KRISHNAPRASAD P., Bombay Potteries & T., Ltd., Bombay, India; ceramic chemist.

Student

Missouri School of Mines: VERNON L. KASTEN.

New York State College of Ceramics: DORIS J. COUTANT, WILLIAM J. EAMES.

MEMBERSHIP WORKERS' RECORD

CORPORATION: C. T. Frazier 1, F. P. Peel 1, Office 2.

PERSONAL: George Blumenthal 1, P. E. Harth 1, J. F. Hunt 1, H. C. Lee 1, Theodore Lenchner 1, J. T. Littleton 1, E. L. Maxson 1, Ellsworth Ogden 1, H. M. Parkhurst 1, A. A. Wells 1, Office 7.

STUDENT: R. M. Campbell 1, C. M. Harder 1, P. G. Herold 1.

GRAND TOTAL: 24.

ROSTER CHANGES IN MAY†

Corporation

HAWS REFRACTORIES CO., E. E. Slick, Sr. (voter), 2128 Farmers Bank Bldg., Pittsburgh 22, Pa. (Johnstown, Pa.)

Personal

BOWN, LEWIS H., Box 305, Lewiston, N. Y. (Grafton, W. Va.)

BREITENSTEIN, JOHN S., 3 University Circle, Linden, N. J. (Metuchen, N. J.)

BROWNELL, WAYNE E., 126 Hornell St., Hornell, N. Y. (Painted Post, N. Y.)

BURNS, LT. (JG) FREDERICK L., 501 Avery St., Pensacola, Fla. (Dallas, Texas)

DAGER, PROBERT W., California Art Products Co., 1741 Clover Field Blvd., Santa Monica, Calif. (Newell, W. Va.)

HEDQUIST, ALFRED J., 406 W. Fourth St., East Liverpool, Ohio (Chester, W. Va.)

KNOWLES, W. V., 8417 W. Rivershore Dr., Niagara Falls, N. Y. (Cleveland Heights, Ohio)

LENZ, VERNON W., 6128 S. Richmond St., Chicago 29, Ill. (Newark, Ohio)

MCCORMICK, MAJOR JOHN M., 321 E. Main St., Ottawa, Ill. (San Francisco, Calif.)

METZGER, A. J., Wahl Refractory Products Co., Fremont, Ohio (Louisville, Ky.)

RANDOLPH, CAPT. HALFRED F., Box 537, Villa Place, Eatontown, N. J. (Rumson, N. J.)

SCHOENLAUB, ROBERT A., Sylvester & Co., Terminal Tower, Cleveland 13, Ohio (Maple Grove, Ohio)

SHATTUCK, LUCILLE, Box 369, R. D., Half Moon Bay, Calif. (San Francisco, Calif.)

SHAW, DOUGLAS M., 301 N. Bridge St., San Gabriel, Calif. (Monrovia, Calif.)

* Indicates former member of The Society rejoining.
† Address in parentheses is former address.

MEMBERS IN SERVICE

The following members of this Society are in fighting units of war service. There are several in service in Washington not included in this Service Roster. This list, which was begun September, 1942, and added to each succeeding month, is probably not complete, and we would appreciate information on other members.

(432) CAPT. JOHN W. BRISCOE, Tyndall Field, Panama City, Fla.
(433) JOHN B. CHRISTENSEN, 34 H St., Chula Vista, Calif.
(434) FELIX M. FRAULINI, Charles Taylor Sons Co., Taylor, Ky.
(435) R. F. HAVELL, 13 Ashland Ave., River Forest, Ill.
(436) LELAND J. MCCLEISH, 504 N. Main St., Benton, Ill.
(437) WILLIAM J. MEID, University of Illinois, Urbana, Ill.
(438) COL. R. G. MILLS, c/o Postmaster, New York, N. Y.
(439) JOHN D. MINK, Armstrong Cork Co., Hart Glass Div., Dunkirk, Ind.
(440) CAPT. J. G. MOORE, c/o Postmaster, New York, N. Y.
(441) MAJOR LYMAN M. MOORE, c/o Postmaster, San Francisco, Calif.
(442) J. W. PETTYJOHN, 880 Summit St., Salem, Ohio.
(443) HARLEY R. PINNOW, Orangeville, Ill.
(444) CAPT. WILLIAM C. PITTMAN, c/o Postmaster, San Francisco, Calif.
(445) LT. ROBERT W. SLAUGHTER, Fort Story, Va.
(446) CAPT. MERLIN H. WHITEHEAD, c/o Postmaster, San Francisco, Calif.

★ LETTERS FROM SERVICEMEN ★

Somewhere in Germany,
10 April, 1945

Dear Sir:

In regard to your letter dated March 23. Thank you very much for the addresses of Lt. (j.g.) Mitchell and Lt. (j.g.) Wysong.

Answering your question about my publications. I wish that you would keep them for me until a later date when I will be able to use them.

I am also anxiously waiting to hear from Charles S. Pearce, Associate Secretary, concerning positions for returning servicemen.

I am sorry this has to be such a short letter but the Krauts are running so fast that we have a hard time keeping up with them.

Yours for Victory,
HARVEY L. COHEN,
Lieutenant, U. S. Army

★

Philippines,
22 April, 1945

Dear Dr. Purdy:

Just received your letter of March 3 to members in the services. That is excellent mail delivery when you consider that it went through about six camps and half way around the world before it arrived.

Thank you for the letters. They are doing a wonderful job in keeping us informed of the latest developments in the ceramic field. Although I entered the service immediately after getting my degree at Rutgers and have had no contact with the industry since that time, your regular letters make me feel that I am still something of a ceramist.

I am enclosing my dues for 1945. Sorry that it took me so long to get around to it, but I forgot about them completely during my travels.

Sincerely yours,
IRVING I. COHEN

★

San Francisco, Calif.,
5 April, 1945

Dear Dr. Purdy:

First of all, I want you to know that I received your Christmas Greeting. Even though it was a bit late in reaching me, it was appreciated very much just the same. It is pretty hard for mail to catch me because I have been at sea almost constantly during the past six months.

The news around the world today looks very bright for us. Perhaps this struggle will be over soon so we can go back to our normal lives once more. In conjunction with this thought, I would like to rejoin The Society's paying members as of 1 January, 1945.

Enclosed you will please find a money order for $12.50 for my 1945 membership. I would like to have the magazines sent to 126 Hornell St., Hornell, N. Y. Your news letters should be mailed to my Navy address. I thank you again.

Very truly yours,
WAYNE E. BROWNELL,
Lieutenant (j.g.), U. S. Naval Reserves

★

Italy,
25 April, 1945

Dear Dr. Purdy:

I have just received your April 6 letter to ceramists in the service. It was great to hear from you and interesting to hear some of the postwar plans for the industry.

When I first came on active duty, my publications became so mixed up, because of change of address, that I finally had my family hold them for me at home. I am now interested to know how I stand on membership dues, and I would like to start having the publications mailed to my overseas address.

Have there been any articles published in *The Bulletin* or *Journal* concerning the new developments in silicon? I understand that big things are being done with it in the plastic field, and I would really like to get some literature on the subject. If you have anything on this I certainly would appreciate your sending me a copy.

Things seem to be going very nicely over here. The place is all shot to hell, but the people seem to be getting started on the job of rebuilding. The structural clay people will be busy for a long time. A few of the china factories are back in operation, but their main production is souvenirs for the GI's.

Thanks again for your letter, and I hope that we can all get together for a convention before long.

Best regards,
HENRY H. THOMAS,
Captain, U. S. Army

★

San Francisco, Calif.,
May 13, 1945

Dear Sir:

Please change my permanent mailing address from 407 E. Erie St., Painesville, Ohio, to 1149 W. Jackson St., Painesville, Ohio. I do not want my *Journals* and *Bulletins* chasing me into the Pacific, as I would have very slight use of them there, as we expect to be rather busy.

I am one of the assistant gunnery officers aboard a new destroyer that is being commissioned here in San Francisco next month.

I am at present stationed at Treasure Island helping to form and train our crew in preparation of a fighting ship. At least, we all hope it will be a fighting ship.

I am really looking forward to the war's end so that I can resume my job at the Ferro Enamel Corporation in Cleveland. I was only there a short time but really learned to like the work.

I was sorry to hear the Meeting was called off. I attended the last two in Pittsburgh and know what a great time every one has. I am hoping that I will be able to be present when the Meetings are resumed.

Respectfully yours,
GRANT E. MILLER,
Ensign, U. S. Naval Reserves

CHARLES F. HANKS PROMOTED TO CAPTAIN

Charles F. Hanks, Jr., a member of The American Ceramic Society since 1939, has been promoted from first lieutenant to captain as an assistant to the intelligence officer of the Sixth Infantry Division on Luzon. He went overseas in September, 1943, and was stationed in Hawaii and New Guinea before landing with the amphibious forces at Lingayen Gulf in January, 1945.

Captain Hanks is a graduate of the University of Illinois and before entering the service was associated with the Westinghouse Electric & Mfg. Company in the Research Laboratories at East Pittsburgh, Pa., and in the Porcelain Division, Emeryville, Calif.

He is the co-author with Ralston Russell, Jr., of a paper entitled "Stress-Strain Characteristics of Plastic Clay Masses" which was published in the January, 1942, issue of *The Journal*.

PERSONAL NOTES

Raymond E. Birch

R. E. BIRCH APPOINTED RESEARCH DIRECTOR OF HARBISON-WALKER

Raymond E. Birch has been appointed Director of Research of the Harbison-Walker Refractories Co., Pittsburgh, Pa., to succeed the late Fred A. Harvey. Mr. Birch has been associated with the Company since 1930. He was graduated in ceramic engineering from the Ohio State University in 1927 and received the professional degree of ceramic engineer in 1937. His first position was with the Carlyle Labold Co., Portsmouth, Ohio. For two years, beginning in 1928, Mr. Birch was a research engineer at the Roseville Ceramic Laboratory of the O. S. U. Engineering Experiment Station. Here the research was carried through which led to the development of the va - uum pressing of refractories. His other fields of investigation have included studies on applications of thermochemical mineralogy and development work on silica, magnesite, and forsterite refractories. His publications include the chapter on Magnesite in the A.I.M.E. book, Industrial Minerals and Rocks, and papers on the processing and use of refractories.

Mr. Birch has been active in The American Ceramic Society, serving at various times as Trustee, Chairman of the Refractories Division, and Chairman of the Pittsburgh Local Section. He is also a Fellow of The Society. He is a member of the Institute of Ceramic Engineers, the Society of Glass Technology, the American Institute of Mining and Metallurgical Engineers, the British Iron and Steel Institute, and is a Fellow of the American Association for the Advancement of Science. He was an organizer and is now vice-president of the Pittsburgh Geological Society.

For a more extensive biographical sketch of Mr. Birch and list of publications, see the July, 1938, *Bulletin*, p. 296.

C. E. Mason

BRISTOL APPOINTS C. E. MASON TECHNICAL DIRECTOR

C. E. Mason has been appointed technical director of the Bristol Company, Waterbury 91, Conn., manufacturers of automatic control and recording instruments.

Mr. Mason was graduated from Marietta College in 1917 and later specialized in automatic control problems. From 1925 until 1941, he was associated with the Foxboro Company, for several years as director of control research, and since then was director of engineering for the Mason-Neilon Regulator Company.

Mr. Mason has made a large number of pioneering contributions through invention and research to the advancement of industrial automatic control design and engineering. In 1940, he received from the National Association of Manufacturers a special award as one of the country's Modern Pioneers for his accomplishments in the field of automatic control.

Mr. Mason has written many papers on the basic principles of automatic control. He is associated with many technical groups studying the science of automatic control and is an active member of the Committee on Theory of the Industrial Instruments and Regulator Division of the American Society of Mechanical Engineers.

LOCAL SECTION IN WEST VIRGINIA

A new Local Section is being organized at Parkersburg, W. Va. The first meeting will be held Friday, June 22, 1945, at the Stratford Hotel, Parkersburg. Dinner will be served at 7:00 P.M. Members in central West Virginia and southeastern Ohio are invited to participate. Send your reservations to W. R. Schlehr, Demuth Glass Works, Inc., Box 629, Parkersburg, W. Va., or telephone Vienna 191.

President C. Forrest Tefft expects to be present.

PERSONAL NOTES

George B. Michie

G. B. MICHIE ADVANCED AT ELECTRO

George B. Michie was elected vice-president in charge of sales of the Electro Refractories & Alloys Corp., Buffalo, N. Y., April 24, 1945.

Mr. Michie was born and educated in Aberdeen, Scotland, and served in the Royal Navy in World War I. He came to the United States in February, 1923, and was employed by the International Motor Company (Mack Truck) in New Brunswick, N. J. He was next associated with Alloys & Products, New York, N. Y., where he was in charge of the manufacture of special nonferrous alloys. He then was engaged as western representative for the Niagara Falls Smelting & Refining Corp., Buffalo, N. Y., with headquarters in Chicago. He became associated with the Electro Refractories & Alloys Corporation January 1, 1931, and instituted the Alloys Division of that Company, having charge of that Department for ten years. For the past five years, Mr. Michie has been in charge of purchasing and priorities for Electro.

He is a member of the Buffalo Athletic Club, the American Foundrymen's Association, and the American Institute of Mining and Mechanical Engineers. He is now chairman of the local chapter of the American Society for Metals and has served for the past year as national director of the Purchasing Agents Association of Buffalo.

BRICK PLANT IN U.S.S.R. RESUMES OPERATIONS

The Hofmann kiln of the largest brick plant in the Soviet Union has been lighted after a long interruption, according to the Soviet press. Located in Leningrad, the plant was idle during the blockade. The factory's production in 1945 is expected to amount to 32 million brick.

NECROLOGY

NELSON McCOY*

Nelson McCoy, president and treasurer of the Nelson McCoy Pottery Co., Roseville, Ohio, died suddenly from a heart attack Thursday, April 19, 1945. He was sixty-one years of age.

Although he had been in failing health for the past five years Mr. McCoy had made it a practice to visit his plant at Roseville at least three times each week and he had been at the plant until noon Thursday.

Nelson McCoy

Mr. McCoy organized the Nelson McCoy Pottery Company in 1910. Associated with him in the business is Nelson Melick, his nephew, who is vice-president and general manager of the Company.

An unusual coincidence occurred in the fact that Mr. McCoy's death came on the eve of the thirty-fifth anniversary of the founding of his business. Just ten years ago on April 20, the Company celebrated its twenty-fifth anniversary, and Mr. McCoy and his plant officials were widely congratulated upon their excellent production record and high standing in the community. At that time, as a mark of appreciation, each of his employees was given an extra week's wages and a five per cent increase in salary.

Born November 25, 1883, Mr. McCoy was reared in Roseville and attended the Roseville schools, after which he became a student at the University of Michigan, Ann Arbor, Mich., and was graduated in 1907 as a chemical engineer. He was the son of James W. McCoy and Sarah E. McCoy, Zanesville residents until they removed to Roseville.

Mr. McCoy is survived by his widow, the former Ruth Bolin, whom he married in September, 1917, and three children, Mary Ann McCoy and Ruth Bolin McCoy at home and Lt. Nelson McCoy, who left the University of Michigan to enter service, received his commission in the Air Corps at Waco, Texas, in March, 1944, and is now stationed at Roswell, New Mex.

Mr. McCoy had been a member of The American Ceramic Society since 1918.

* From the *Zanesville Time Recorder*, April 20, 1945.

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SIMPLEX EQUIPMENT

Simplex Equipment throughout the glassmaking world is today carrying a production burden that has helped meet the unusual demands on the industry.

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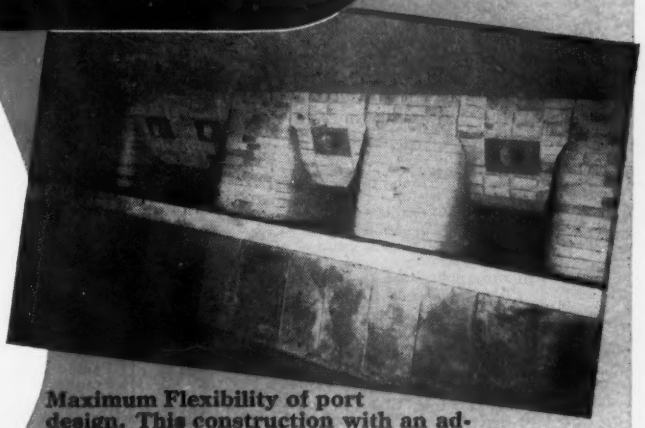
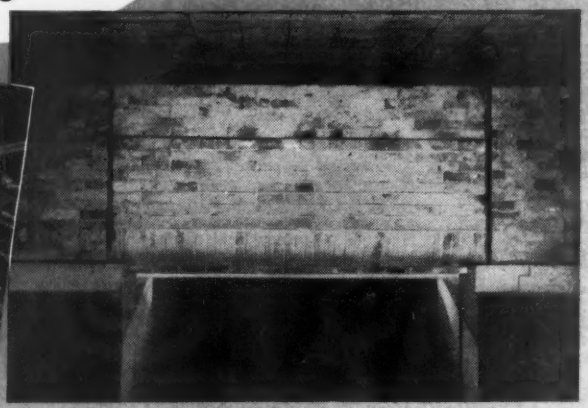
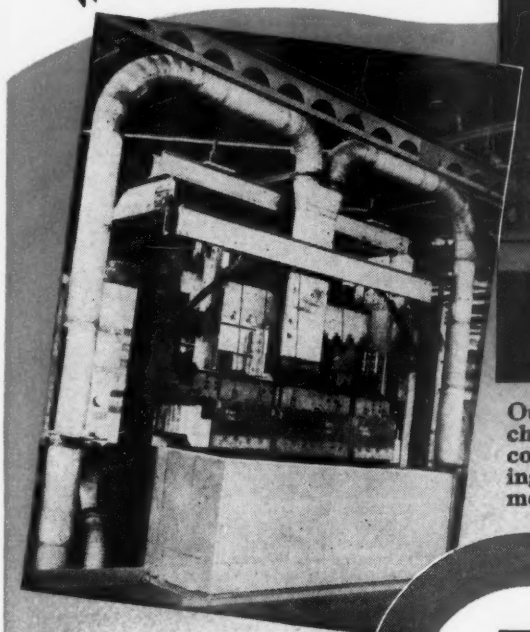


Maximum Flexibility of port design. This construction with an adjustable suspended roof over port opening provides directional control over the flame and permits a wider port for maximum dispersion of the oil. The possibility of flame impingement on refractories is reduced to a minimum.



Inside view of tank showing adjustable suspended back wall and "fritting" chamber. The incoming materials stream is uniformly distributed across the "fritting" chamber for faster and more complete dust free melting.



Outside view of wide covered charging bay before batch charger is placed in position showing adjustable water coolers and air cooling manifold. A Simplex Blanket Feeding System means more glass . . . less fuel . . . and improvement in service life of refractories.

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Bausch & Lomb Optical Co.
Carborundum Co. (*Carborundum and Aloxite*)
Electro Refractories & Alloys Corp.
Hommel, O., Co., Inc.
Norton Co. (*Alundum-Crystolon*)

Acid-proof Mortars
Corhart Refractories Co.

Air Conditioning Systems
Frazier-Simplex, Inc.

Aloxite (Refractory Products)
Carborundum Co.

Alumina (Hydrate and Calcined)
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Vitro Mfg. Co.

Alumina (Fused) Brick and Tile
Electro Refractories & Alloys Corp.
Remmey, Richard C., Son Co.
Vitro Mfg. Co.

Aluminum Oxide (Calcine)
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Aluminum Oxide (Fused)
Carborundum Co.
Electro Refractories & Alloys Corp.
Foote Mineral Co.
Norton Co.
Vitro Mfg. Co.

Alundum (Refractory Products)
Norton Co.

Ammonium Bicarbonate
Du Pont de Nemours, E. I., & Co., Inc.
Hommel, O., Co., Inc.
Solvay Sales Corp.

Ammonium Bifluoride
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Innis, Speiden & Co.
Vitro Mfg. Co.

Ammonium Carbonate
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Antimony Oxide
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Vitro Mfg. Co.

Antimony Sulphide
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Arches (Interlocking, Suspended, and Circular)
Frazier-Simplex, Inc.

Arsenic
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Automatic Brick Car Loaders
Lancaster Iron Works, Inc.

Ball Mills
Drakenfeld, B. F., & Co., Inc.
Hommel, O., Co., Inc.
McDanel Refractory Porcelain Co.
Vitro Mfg. Co.

Ball Mills (Laboratory Type)
Drakenfeld, B. F., & Co., Inc.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Barium Carbonate
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Foote Mineral Co.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Barytes
Clinchfield Sand & Feldspar Corp.
Harshaw Chemical Co.

Basic Oxides
Drakenfeld, B. F., & Co., Inc.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.

Batch Systems & Chargers
Frazier-Simplex, Inc.

Batts
Carborundum Co. (*"Carbofrax Aloxite"*)
Electro Refractories & Alloys Corp.
Norton Co. (*Alundum-Crystolon*)
Remmey, Richard C., Son Co.

Bentonite
Great Lakes Foundry Sand Co.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Beryl
Foote Mineral Co.

Bichromate of Soda
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Bitstone
Potters Supply Co.

Blocks (Refractory)
Carborundum Co.
Corhart Refractories Co.
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.
Vitro Mfg. Co.

Blowers
Robinson Ventilating Co.

Body Stains
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.

Bone Ash
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Borax
American Potash & Chemical Corp.
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Innis, Speiden & Co.
Pacific Coast Borax Co.
Pemco Corp.
Stauffer Chemical Co.
Vitro Mfg. Co.

Borax Glass
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pacific Coast Borax Co.
Stauffer Chemical Co.
Vitro Mfg. Co.

Boric Acid (Anhydrous)
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pacific Coast Borax Co.
Stauffer Chemical Co.
Vitro Mfg. Co.

Boric Acid (Crystal, Granular, or Powder)
American Potash & Chemical Corp.
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Innis, Speiden & Co.
Pacific Coast Borax Co.
Stauffer Chemical Co.
Vitro Mfg. Co.

Boron Carbide
Norton Co.

Brick Machines (also Barrows, Molds)
Lancaster Iron Works, Inc.

Brick (Refractory)
Carborundum Co. (*"Carbofrax Aloxite"*)
Corhart Refractories Co.
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.
Vitro Mfg. Co.

Cadmium Oxide
Drakenfeld, B. F., & Co., Inc.

Cadmium Sulphide
Drakenfeld, B. F., & Co., Inc.
Du Pont, de Nemours and Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Carbofrax (Refractory Products)
Carborundum Co.

Carbonates (Barium, Lead)
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Castings
Lancaster Iron Works, Inc.

Caustic Potash
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Solvay Sales Corp.

Caustic Soda
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Solvay Sales Corp.
Stauffer Chemical Co.
Vitro Mfg. Co.

Cements
Bausch & Lomb Optical Co.
Carborundum Co.
Corhart Refractories Co.
Electro Refractories & Alloys Co.
Norton Co.
Pennsylvania Salt Mfg. Co.
Remmey, Richard C., Son Co.

Ceramic Chemicals
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Pemco Corp.
Pennsylvania Salt Mfg. Co.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.

Cerium Oxide
Drakenfeld, B. F., & Co., Inc.
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Chromite (Natural Chromate of Iron)
Foote Mineral Co.
Hommel, O., Co., Inc.

Chromium Oxide
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Hommel, O., Co., Inc.
Pemco Corp.
Vitro Mfg. Co.

Clay (Ball)
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Kentucky Clay Mining Co.
Maxson, Elwyn L.
Potters Supply Co.
Spinks, H. C., Clay Co.
Vitro Mfg. Co.

Clay (China)
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Vitro Mfg. Co.

Clay—Cleaners, Feeders
Lancaster Iron Works, Inc.

Clay (Electrical Porcelain)
Hammill & Gillespie, Inc.
Hommel, O., Co., Inc.
Kentucky Clay Mining Co.
Maxson, Elwyn L.
Spinks, H. C., Clay Co.

Clay (Enamel)
Ferro Enamel Corp.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Kentucky Clay Mining Corp.
Maxson, Elwyn L.
Metal & Thermit Corp.
Pemco Corp.
Spinks, H. C., Clay Co.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.

Clay (Fire)
Great Lakes Foundry Sand Co.
Maxson, Elwyn L.
Potters Supply Co.

Clay (Micronized)
Pemco Corp.

Clay Miners
Great Lakes Foundry Sand Co.
Kentucky Clay Mining Co.
Maxson, Elwyn L.
Spinks, H. C., Clay Co.

Clay (Modeling)
Potters Supply Co.

Clay (Potters)
Hammill & Gillespie, Inc.
Hommel, O., Co., Inc.
Kentucky Clay Mining Co.
Maxson, Elwyn L.
Spinks, H. C., Clay Co.

Clay (Process Equipment)
Lancaster Iron Works, Inc.

Clay (Sagger)
Georgia Kaolin Co.
Great Lakes Foundry Sand Co.
Hommel, O., Co., Inc.
Kentucky Clay Mining Co.
Maxson, Elwyn L.
Spinks, H. C., Clay Co.

Clay-Slip (Albany)
Hammill & Gillespie, Inc.
Hommel O., Co., Inc.
Maxson, Elwyn L.

Clay (Wad)
Kentucky Clay Mining Co.
Spinks, H. C., Clay Co.

Clay (Wall Tile)
Hammill & Gillespie, Inc.

Women Grant Priorities Too!

Our good neighbor, Old Mexico, inspired this gay, colorful MONTEREY Pattern for Iroquois China, of Syracuse, N. Y. (above)

Gladding, McBean & Co., Los Angeles, caught the colorful, stimulating brilliance of sunny California in this DESERT ROSE Pattern (right)

Today, American housewives grant preference priorities to all-American chinaware. They find aesthetic enjoyment in its colorful, native styling and quality satisfaction in today's production as exemplified by these new offerings from potteries on opposite sides of our continent.

Electro Kiln Furniture is a powerful factor in influencing these women-granted priorities. Its patented floating construction contributes importantly to product improvement and cost reduction.

Let us send details as to how our furniture increases production, facilitates manufacture of thin sections, reduces cracking and sagging, increases first quality percentage, and gives full range to technical skills.

Write us now. We believe the information we send will be eminently satisfying.

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Maxson, Elwyn L.
Spinks, H. C., Clay Co.

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Harshaw Chemical Co.
Pemco Corp.
Pennsylvania Salt Mfg. Co.
Solvay Sales Corp.

Clocks (Gauge Board)
Hommel, O., Co., Inc.

CO_2 Recorders
Leeds & Northrup Co.

Cobalt, Oxide
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.
Vitro Mfg. Co.

Cobalt Sulphate
Drakenfeld, B. F., & Co., Inc.
Du Pont, de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Colors
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.
Vitro Mfg. Co.

Combustion Control
Leeds & Northrup Co.

Combustion Meters (CO_2 Recorders)
Leeds & Northrup Co.

Cone Plaques
Industrial Ceramic Products, Inc.

Cones
Edward Orton, Jr., Ceramic Foundation
Maxson, Elwyn L.

Controllers—Automatic Tank Pressure
Leeds & Northrup Co.

Conveying Equipment
Frazier-Simplex, Inc.
Lancaster Iron Works, Inc.

Copper Oxide
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Cornwall Stone (Imported)
Drakenfeld, B. F., & Co., Inc.
Hammill & Gillespie, Inc.
Hommel, O., Co., Inc.
Maxson, Elwyn L.

Corundum Refractories
Corhart Refractories Co.

Crucibles (Filter, Melting, Ignition)
Norton Co.

Crushers (Clay)
Lancaster Iron Works, Inc.

Cryolite (see Kryolith)
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Pennsylvania Salt Mfg. Co.
Vitro Mfg. Co.

Crystolon (Refractory Products)
Norton Co.

Cullet, Washing Plants, Incinerators, Crushers
Frazier-Simplex, Inc.

Cutters (Bar)
Industrial Ceramic Products, Inc.

Decalcomania
Commercial Decal, Inc.

Decorating Supplies
Commercial Decal, Inc.
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electro chemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Disintegrators
Lancaster Iron Works, Inc.

Dryer (Pipe Rack)
Lancaster Iron Works, Inc.

Dryers (Waste Heat, Continuous and Batch Type)
Harrop Ceramic Service Co.

Drying Machinery
Frazier-Simplex, Inc.
Lancaster Works, Inc.

Electrocast Refractories
Corhart Refractories Co.

Enameling Equipment (Complete)
Ferro Enamel Corp.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Enameling Furnaces
Carborundum Co.
Ferro Enamel Corp.
Hommel, O., Co., Inc.
Norton Co.

Enameling Iron (Sheet)
American Rolling Mill Co.

Enameling Muffles
Carborundum Co. (*Carbofrax*)
Maxson, Elwyn L.
Norton Co. (*Alundum*)

Enameling (Practical Service)
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.

Enamels
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.
Vitro Mfg. Co.

Enamel Oxide
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Enamels (Porcelain)
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.

Engineering Service
Ferro Enamel Corp.
Frazier-Simplex, Inc.
Harrop Ceramic Service Co.

Epsom Salts
Innis, Speiden & Co.

Equipment (Porcelain Enameling)
Ferro Enamel Corp.
Hommel, O., Co., Inc.

Fans
Robinson Ventilating Co.

Feldspar
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.
Solvay Sales Corp.
Vitro Mfg. Co.

Filter Fabrics
Metakloth Company

Fire Brick
Carborundum Co.
Corhart Refractories Co.
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.

Fire Brick—Process Equipment
Lancaster Iron Works, Inc.

Fire Clay
Great Lakes Foundry Sand Co.
Spinks, H. C., Clay Co.

Flint
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc.
Great Lakes Foundry Sand Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.

Flint Pebbles
Clinchfield Sand & Feldspar Corp.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Vitro Mfg. Co.

Flint (Soft decomposed Cararra)
Innis, Speiden & Co.

Floating Construction for Tunnel Kiln Cars
Electro Refractories and Alloys Corp.

Floors (Non-Slip)
Norton Co.

Fluorspar
Harshaw Chemical Co.
Hommel, O., Co., Inc.

French Flint
Maxson, Elwyn L.

Frit
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.

Frosting Mixtures
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Fuel Oil Systems and Control Stokers
Frazier-Simplex, Inc.
Harrop Ceramic Service Co.

Furnaces
Carborundum Co. (*Carboradiant*)
Ferro Enamel Corp.
Frazier-Simplex, Inc.
Harrop Ceramic Service Co.
Hommel, O., Co., Inc.
Swindell-Dressler Corp.

Furnaces (Laboratory)
Remmey, Richard C., Son Co.

Furnaces, Enameling
Ferro Enamel Corp.
Swindell-Dressler Corp.

Gauges, Draft (Recording, Indicating)
Leeds & Northrup Co.

Gauges, Pressure
Leeds & Northrup Co.

Glass Bending Ovens, Glass Decorating Machines
Frazier-Simplex, Inc.

Glass Equipment (Batch Mixer)
Lancaster Iron Works, Inc.

Glass Furnace Refractories
Corhart Refractories Co.

Glass Melting Tanks and Furnaces
Frazier-Simplex, Inc.

Glass Sand
Great Lakes Foundry Sand Co.

Glass Thickness Gauge
Bausch & Lomb Optical Co.

Glaze and Body Spar
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.
Vitro Mfg. Co.

Glazes and Enamels
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.

Glaze Spar
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.

Goggles
Bausch & Lomb Optical Co.
Hommel, O., Co., Inc.

Gold
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc. Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.

Gold Decorations
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.

Granulators
Lancaster Iron Works, Inc.

Grinding Wheels
Carborundum Co. (*Carborundum and Aloxite*)
Electro Refractories & Alloys Corp.
Norton Co. (*Alundum-Crystolon*)

Gums: *Arabic*—Amber Sorts, Powdered Grained
Ghatti—Powdered, Granular, Crude
Locust Bean—Powdered
Tragacanth—Ribbon—Flake—Powdered
Innis, Speiden & Co.

Hearths
Carborundum Co. (*Carbofrax* heat treating)
Corhart Refractories Co.
Norton Co. (*Crystolon*)
Remmey, Richard C., Son Co.

Hearths (High Aluminous Clay, Electrically Sintered Aluminum Oxide, Silicon Carbide)
Carborundum Co.
Norton Co.
Remmey, Richard C., Son Co.

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OVERGLAZE—UNDERGLAZE

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FACTORY—MOUNT VERNON, N. Y.

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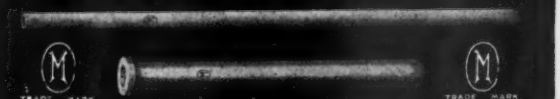
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★ REFRACTORY PORCELAIN

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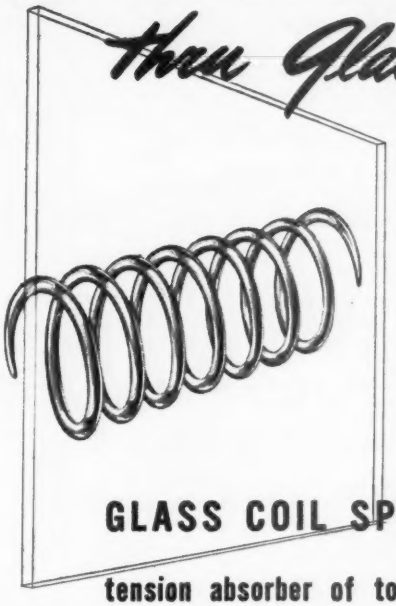

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High Temperature Mortars
Corhart Refractories Co.
Hoists, Portable Hand
Clipper Mfg. Co.
Hydrofluoric Acid
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Ilmenite
Foote Mineral Co.
Orefraction, Inc.
Iron (Enameling)
American Rolling Mill Co.
Iron Oxide
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.
Vitro Mfg. Co.
Kaolin
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Vitro Mfg. Co.
Kiln Furniture (Silicon Carbide, Semi-Silicon Carbide) (Refractory)
Carborundum Co.
Electro Refractories & Alloys Corp.
Ferro Enamel Corp.—Ceramic Supply Div.
Maxson, Elwyn L.
Remmey, Richard C., Son Co.
Kilns, China (Decorating)
Drakenfeld, B. F., & Co., Inc.
Ferro Enamel Corp.—Allied Engineering Div.
Frazier-Simplex, Inc.
Harrop Ceramic Service Co.
Hommel, O., Co., Inc.
Swindell-Dressler Corp.
Kilns (Electric, Circular, Tunnel)
Ferro Enamel Corp.—Allied Engineering Div.
Harrop Ceramic Service Co.
Maxson, Elwyn L.
Swindell-Dressler Corp.
Kilns (Laboratory)
Remmey, Richard C., Son Co.
Kryolith (see Cryolite)
Pennsylvania Salt Mfg. Co.
Laboratory Ware
Norton Co.
Lehr Tile (High Aluminous Clay, Electrically Sintered Aluminum Oxide, Silicon Carbide)
Carborundum Co.
Electro Refractories & Alloys Corp.
Lehrs
Frazier-Simplex, Inc.
Swindell-Dressler Corp.
Lehrs (Electric or Fuel Heated)
Frazier-Simplex, Inc.
Swindell-Dressler Corp.
Lehr Loaders
Frazier-Simplex, Inc.
Linings (Furnace Refractory, Block Refractory Plate, Brick, and Tile)
Carborundum Co.
Corhart Refractories Co.
Electro Refractories & Alloys Corp.
Maxson, Elwyn L.
Norton Co.
Remmey, Richard C., Son Co.
Vitro Mfg. Co.
Lithium Carbonate
Drakenfeld, B. F., & Co., Inc.
Foote Mineral Co.
Hommel, O., Co., Inc.
Metalloy Corp.
Lithium Flouride
Metalloy Corp.
Lithium Minerals
Foote Mineral Co.
Metalloy Corp.
Magnesia (Fused)
Electro Refractories & Alloys Corp.
Norton Co.
Magnesia (Sintered, Calcined)
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.
Magnesite
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Foote Mineral Co.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Magnesite Calcined
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Magnesium Carbonate
Drakenfeld, B. F., & Co., Inc.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Manganese Dioxide
Drakenfeld, B. F., & Co.
Ferro Enamel Corp.
Foote Mineral Co.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Manganese (Oxide)
Corhart Refractories Co.
Drakenfeld, B. F., & Co., Inc.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Masks (Breathing)
Drakenfeld, B. F., & Co., Inc.
Hommel, O., Co., Inc.
Metals (Porcelain Enameling)
American Rolling Mill Co.
Micronized Products
Pemco Corp.
Microscope, Laboratory
Bausch & Lomb Optical Co.
Microscopes (Polarizing)
Bausch & Lomb Optical Co.
Harshaw Chemical Co.
Spencer Lens Co.
Microscopes (Stereoscopic)
Bausch & Lomb Optical Co.
Harshaw Chemical Co.
Spencer Lens Co.
Minerals
Clinchfield Sand & Feldspar Corp.
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Foote Mineral Co.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Orefraction, Inc.
Vitro Mfg. Co.
Mixers
Clearfield Machine Co.
Mixers (Batch)
Clearfield Machine Co.
Lancaster Iron Works, Inc.
Mixers (Concrete, Paving, Road Paving, Plaster, Asphalt, Truck, Mortar, Bituminous)
Lancaster Iron Works, Inc.
Mixers (Laboratory)
Lancaster Iron Works, Inc.
Mold Sanders
Lancaster Iron Works, Inc.
Muffles (Furnace) (Laboratory)
Carborundum Co. (*Carbofrax*)
Electro Refractories & Alloys Corp.
Frazier-Simplex, Inc.
Maxson, Elwyn L.
Norton Co.
Remmey, Richard C., Son Co.
Mullers (Batch)
Clearfield Machine Co.
Lancaster Iron Works, Inc.
Mullite Refractories
Corhart Refractories Co.
Remmey, Richard C., Son Co.
Muriatic Acid
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Needle Antimony
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Nepheline Syenite
Great Lakes Foundry Sand Co.
Maxson, Elwyn L.
Nickel Salts
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Nitrates (Cobalt, Sodium)
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Nitre
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Norbide (Norton Boron Carbide)
Norton Co.
Olivine
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Opacifiers
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Metal & Thermit Corp.
Pemco Corp.
Pennsylvania Salt Mfg. Co.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.
Overglaze Colors
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Oxides
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Metal & Thermit Corp.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.
Palladium Decorations
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Hommel, O., Co., Inc.
Pans—Wet and Dry
Clearfield Machine Co.
Pins
Hommel, O., Co., Inc.
Industrial Ceramic Products, Inc.
Potters Supply Co.
Placing Sand
Great Lakes Foundry Sand Co.
Platinum Decorations
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Hommel, O., Co., Inc.
Polariscopes
Frazier-Simplex, Inc.
Porcelain Enameling Service (Practical)
American Rolling Mill Co.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.
Porcelain Enamels
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.
Potash (Carbonate)
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Innis, Speiden & Co.
Solvay Sales Corp.
Vitro Mfg. Co.
Potassium Hydroxide
Innis, Speiden & Co.
Solvay Sales Corp.
Producer Gas Plants
Frazier-Simplex, Inc.
Pug Mills
Lancaster Iron Works, Inc.
Pyrites (Natural Iron Sulphide)
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pyrometer Tubes
Carborundum Co.
Leeds & Northrup Co.
Maxson, Elwyn L.
Montgomery Porcelain Products Co.
Pyrometer Tubes (Refractory and Hard Porcelain)
Electro Refractories & Alloys Corp.
McDanel Refractory Porcelain Co.
Montgomery Porcelain Products Co.
Norton Co.
Pyrometers (Optical, Radiation, Surface, Immersion, Needle)
Leeds & Northrup Co.
Pyrometric Cones
Du Pont, de Nemours, E. I., & Co., Inc.
Edward Orton, Jr., Ceramic Foundation
Maxson, Elwyn L.
Pyrophyllite
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Quartz (Granulated)
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc.
Ramming Mixes
Corhart Refractories Co.
Raw Material Handling Equipment
Frazier-Simplex, Inc.

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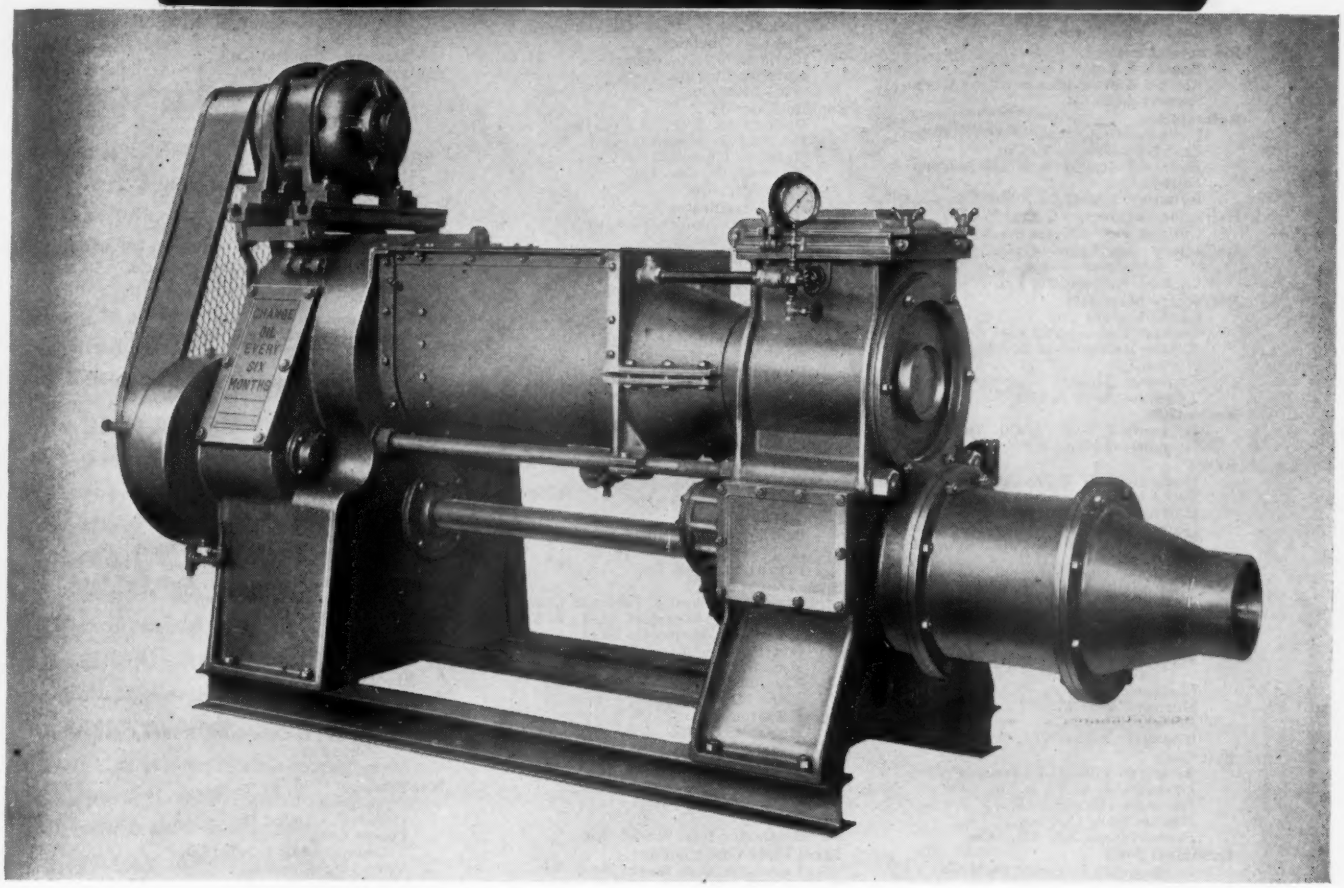

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F-R-H Ceramic Machinery is designed and built around many years of experience in serving the industry. We know that one type and design of machinery will not answer the many individual problems of a manufacturer.

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F-R-H Ceramic Machinery is built for de-airing extrusion of pottery clays of all types.

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CERAMIC MACHINERY

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SILVER KING Industrial Tractors

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Recorders, CO_2
Leeds & Northrup Co.
Recorders, Draft
Leeds & Northrup Co.
Recorders, Tank Pressure
Leeds & Northrup Co.
Refractometers
Bausch & Lomb Optical Co.
Electro Refractories & Alloys Corp.
Spencer Lens Co.
Refractories
Carborundum Co.
Corhart Refractories Co.
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.
Refractory Aggregate Grain
Corhart Refractories Co.
Refractory Aggregate Grain for Catalytic Processes
Corhart Refractories Co.
Refractory Materials
Carborundum Co.
Corhart Refractories Co.
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.
Titanium Alloy & Mfg. Co.
Respirators
Drakenfeld, B. F., & Co., Inc.
Hommel, O., Co., Inc.
Rutile
Drakenfeld, B. F., & Co., Inc.
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Orefraction, Inc.
Titanium Alloy Mfg. Co.
Vitro Mfg. Co.
Saggers
Carborundum Co.
Electro Refractories & Alloys Corp.
Ferro Enamel Corp.—Ceramic Supply Div.
Maxson, Elwyn L.
Norton Co.
Potters Supply Co.
Remmey, Richard C., Son Co.
Salt Cake
American Potash & Chemical Corp.
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Sandblast Sand
Great Lakes Foundry Sand Co.
Sand Grinders and Sifters
Lancaster Iron Works, Inc.
Saws (Masonry)
Clipper Mfg. Co.
Selenite of Sodium
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Selenium
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Sheets (Enameling Iron)
American Rolling Mill Co.
Silica (Fused)
Electro Refractories & Alloys Corp.
Foote Mineral Co.
Hommel, O., Co., Inc.
Remmey, Richard C., Son Co.
Silicate Furnace Refractories
Corhart Refractories Co.
Silicate of Soda
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Silicon Carbide
Carborundum Co.
Electro Refractories & Alloys Corp.
Norton Co.
Sillimanite Refractories
Electro Refractories & Alloys Corp.
Maxson, Elwyn L.
Remmey, Richard C., Son Co.
Slabs (Furnace)
Carborundum Co.
Electro Refractories & Alloys Corp.
Maxson, Elwyn L.
Norton Co.
Remmey, Richard C., Son Co.
Soap, Mouldmakers
Drakenfeld, B. F., & Co., Inc.
Soda Ash
American Potash & Chemical Corp.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Solvay Sales Corp.
Vitro Mfg. Co.
Sodium Antimonate
Drakenfeld, B. F., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Vitro Mfg. Co.
Sodium Fluoride
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Sodium Metasilicate
Harshaw Chemical Co.
Innis, Speiden & Co.
Sodium Nitrite
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Sodium Orthosilicate
Innis, Speiden & Co.
Sodium Silica Fluoride
Du Pont de Nemours, E. I., & Co., Inc.,
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Innis, Speiden & Co.
Sodium Uranate
Drakenfeld, B. F., & Co., Inc.
Du Pont, de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Soot Blowers
Frazier-Simplex, Inc.
Special Machines
Frazier-Simplex, Inc.
Spar
Clinchfield Sand & Feldspar Corp.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Maxson, Elwyn L.
Vitro Mfg. Co.
Spray Booths
Hommel, O., Co., Inc.
Spraying Equipment
Hommel, O., Co., Inc.
Spurs
Potters Supply Co.
Stacks
Lancaster Iron Works, Inc.
Steel Plate Construction
Lancaster Iron Works, Inc.
Stilts
Hommel, O., Co., Inc.
Industrial Ceramic Products, Inc.
Potters Supply Co.
Strontium Carbonate
Pennsylvania Salt Mfg. Co.
Sulfur
Hommel, O., Co., Inc.
Stauffer Chemical Co.
Sulfuric Acid
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Pennsylvania Salt Mfg. Co.
Stauffer Chemical Co.
Talc (Lava)
Clinchfield Sand & Feldspar Corp.
Maxson, Elwyn L.
Talcs
Clinchfield Sand & Feldspar Corp.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Innis, Speiden & Co.
Tanks
Frazier-Simplex, Inc.
Tank Blocks
Corhart Refractories Co.
Tanks (Pickle)
Hommel, O., Co., Inc.
Tanks for Raw Material Steel or Concrete
Lancaster Iron Works, Inc.
Thimbles—Decorating
Potters Supply Co.
Tile (Floor)
Carborundum Co.
Norton Co.
Tile (Muffle)
Carborundum Co.
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.
Tile (Refractory)
Carborundum Co., (*Carbofrax*)
Electro Refractories & Alloys Corp.
Norton Co.
Remmey, Richard C., Son Co.
Tin Oxide
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Vitro Mfg. Co.
Titanium Oxide
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Foote Mineral Co.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Metal & Thermit Corp.
Orefraction, Inc.
Titanium Alloy Mfg. Co.
Vitro Mfg. Co.
Trisodium Phosphate
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Trucks
Lancaster Iron Works, Inc.
Tubes (Insulating)
Carborundum Co.
McDanel Refractory Porcelain Co.
Norton Co.
Tubes (Pyrometer)
Carborundum Co.
Electro Refractories & Alloys Corp.
Leeds & Northrup Co.
Maxson, Elwyn L.
McDanel Refractory Porcelain Co.
Montgomery Porcelain Products Co.
Norton Co.
Ultrox
Metal & Thermit Corp.
Uranium Oxide
Drakenfeld, B. F., & Co., Inc.
Ferro Enamel Corp.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Uranium Oxide (Yellow-Orange-Black)
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.
Ferro Enamel Corp.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Uverite
Harshaw Chemical Co.
Water Softening Plants
Frazier-Simplex, Inc.
Waxes (Beeswax, Carnauba, Refined yellow Beeswax)
Innis, Speiden & Co.
Wet Enamel
Ferro Enamel Corp.
Hommel, O., Co., Inc.
Pemco Corp.
Titanium Alloy & Mfg. Co.
Vitro Mfg. Co.
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Whiting
Drakenfeld, B. F., & Co., Inc.
Du Pont de Nemours, E. I., & Co., Inc.
Hammill & Gillespie, Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Potters Supply Co.
Vitro Mfg. Co.
Winding Drums
Lancaster Iron Works, Inc.
Zinc Oxide
Du Pont de Nemours, E. I., & Co., Inc.
Harshaw Chemical Co.
Hommel, O., Co., Inc.
Vitro Mfg. Co.
Zircon
Foote Mineral Co.
Hommel, O., Co., Inc.
Metal & Thermit Co.
Orefraction, Inc.
Titanium Alloy Mfg. Co.
Zirconia
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Titanium Alloy Mfg. Co.
Zirconium Silicate
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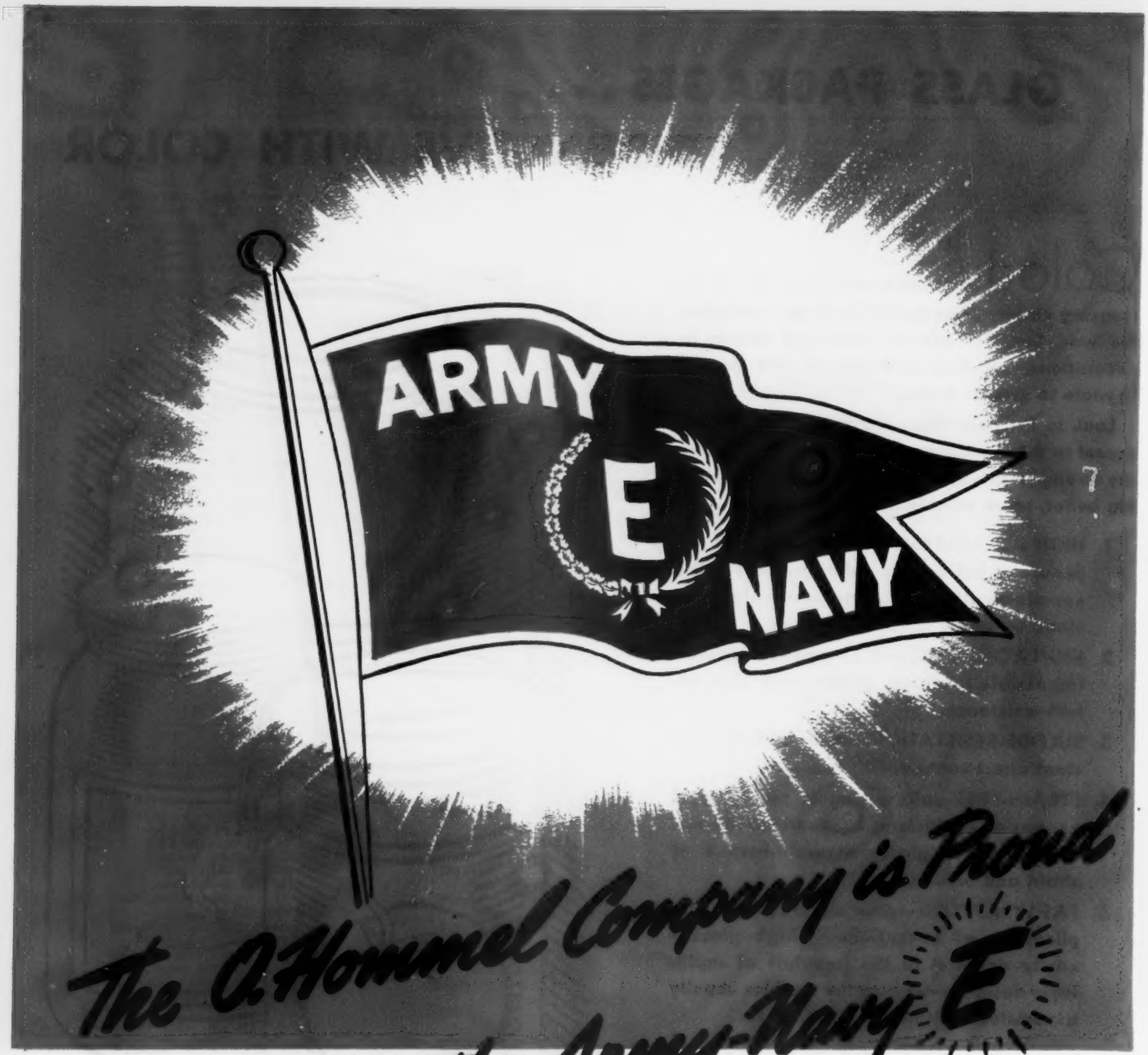

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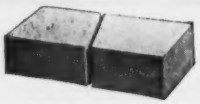
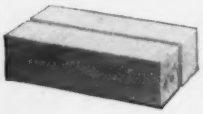


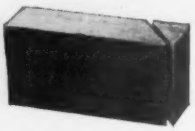
This acid brick intended for a chemical plant acid chamber was cut completely in two, in just 37 seconds.

One of many intricate cuts performed on first quality clay brick for heat treating furnaces. Made in 8 sec.



Silica brick cut lengthwise for open hearth furnace work, only 9 seconds were required to complete this cut!

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnesite brick was cut in 12 seconds.



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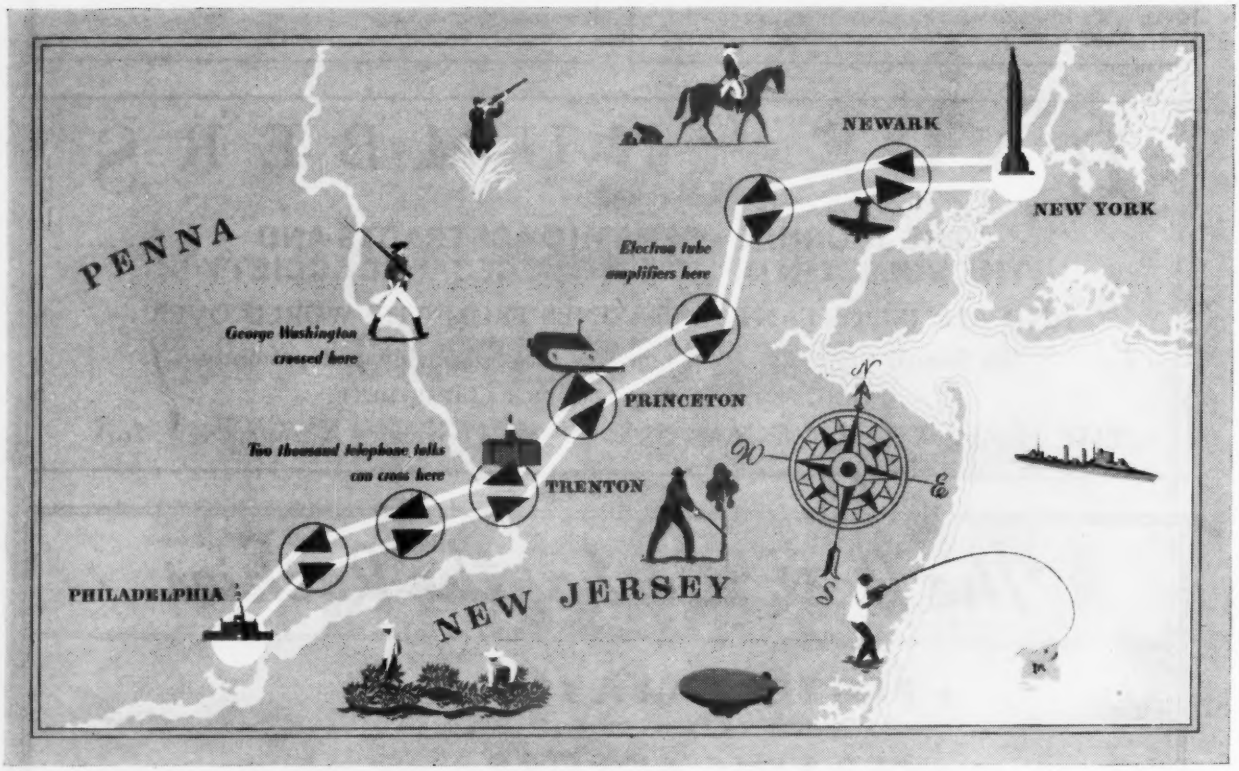

BETWEEN telephone offices in New York and Philadelphia once stretched a strange sort of laboratory. Most of the way it was underground; engineers made their measurements sometimes in manholes. It was a lead-sheathed cable containing two "coaxials"— each of them a wire supported in the center of a flexible copper tube.

Theory had convinced engineers of Bell Telephone Laboratories that a coaxial could carry many more telephone talks than a full-sized voice frequency telephone cable; that it could carry adequately a television program. Experimental lengths were tested; terminal apparatus was designed and tried out. Finally, a full-sized trial was made with a system designed for 480 conversations. It was successful; in one demonstration people talked over a 3800-mile circuit looped back and forth. Now the cable is carrying some of the wartime flood of telephone calls between these two big cities.

This cable made television history also: through it in 1940 were brought spot news pictures of a political convention in Philadelphia to be broadcast from New York. Bell System contributions to television, which began with transmission from Washington to New York in 1927, have been laid aside for war work. When peace returns, a notable expansion of coaxial circuits is planned for both telephone and television in our Bell System work.

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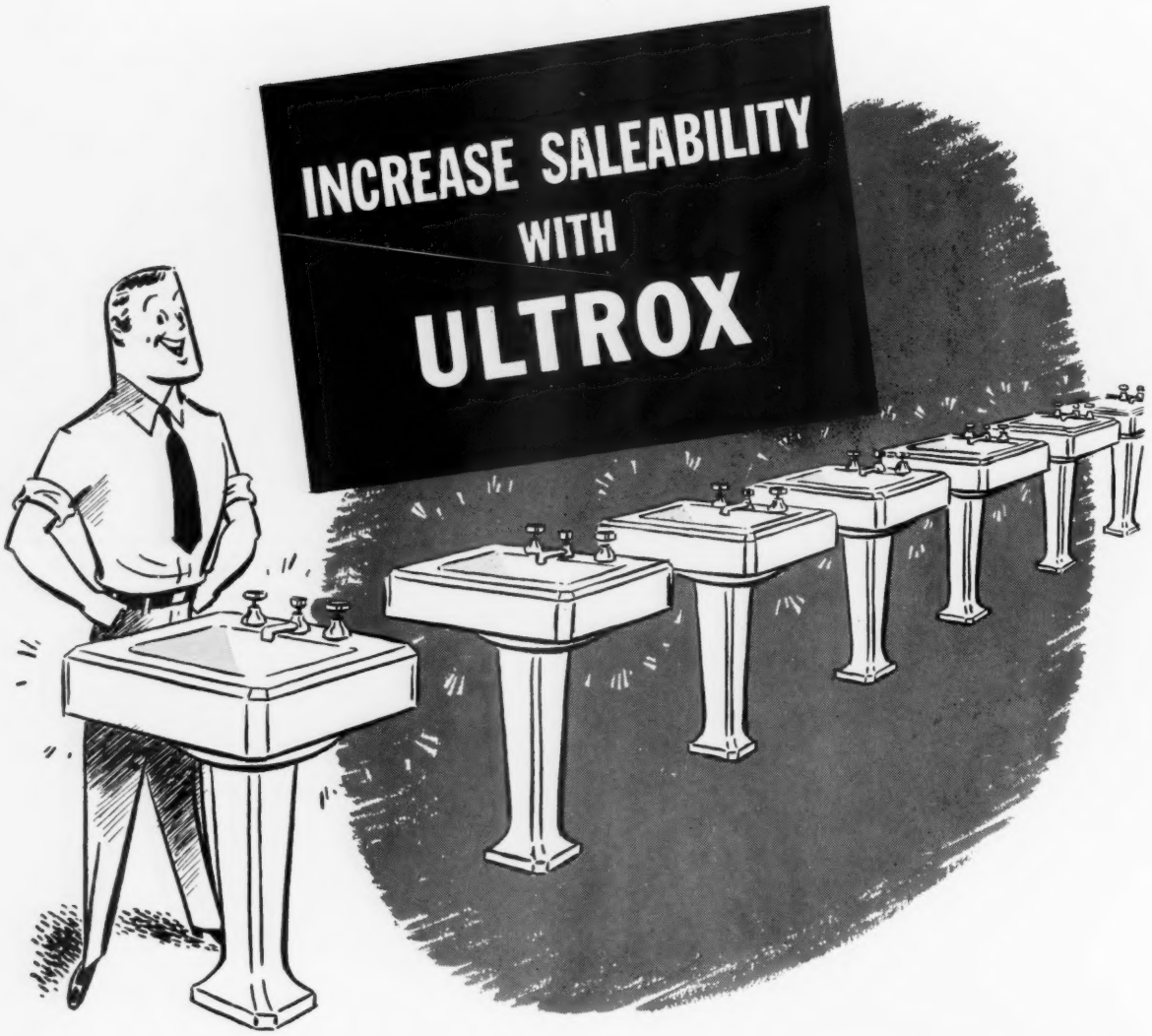

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